EFFECT OF HIGH OCCUPANCY TOLL (HOT) LANES ON MASS VEHICLE EMISSIONS: AN APPLICATION TO I-85 IN ATLANTA

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EFFECT OF HIGH OCCUPANCY TOLL (HOT) LANES ON MASS VEHICLE EMISSIONS: AN APPLICATION TO I-85 IN ATLANTA

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LIST OF SYMBOLS AND ABBREVIATIONS

ARC	Atlanta Regional Commission
CE	Categorical Exclusion
CFR	Code of Federal Regulations
CMEM	Comprehensive Modal Emissions Model
CO	Carbon Monoxide
df	degrees of freedom
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPD	Environmental Protection Division
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
g	grams
GP-HOT share	General Purpose to High Occupancy Toll share
GP Lanes	General Purpose Lanes
HC	Hydrocarbons
HOV Lanes	High Occupancy Vehicle Lanes
HOT Lanes	High Occupancy Toll Lanes
I/M	Inspection and Maintenance
ISTEA	Intermodal Surface Transportation Efficiency Act
LD-HOT share	Latent Demand to High Occupancy Toll share
LDV	Light Duty Vehicle
LDT2	Light Duty Truck Class 2
mph	miles per hour

MVEB	Motor Vehicle Emissions Budget
NAAQS	National Ambient Air Quality Standards
NB	Northbound
NEPA	National Environmental Policy Act
NO_x	Oxides of Nitrogen
$PM_{2.5}$	Particulate Matter less than or equal to 2.5 micrometers
PM_{10}	Particulate Matter less than or equal to 10 micrometers
RTP	Regional Transportation Plan
SB	Southbound
SIP	State Implementation Plan
SOV	Single Occupant Vehicle
TDM	Travel Demand Model
TIP	Transportation Improvement Program
TPD	Tons Per Day
US	United States
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compounds
χ^2	chi-squared

SUMMARY

High Occupancy Toll (HOT) lanes were recently proposed for I-85 in Atlanta as a way to relieve congestion and provide a reliable commute time for single occupant drivers that are willing to pay a toll. It is important to evaluate the air quality impacts of such a proposal to meet environmental regulations, such as the National Environmental Policy Act (NEPA) and Transportation Conformity Regulations.

The goal of this study is to understand how vehicle mass emissions change as a result of implementing HOT lanes on I-85 in Atlanta . This is done by considering a number of factors affect mass vehicle emissions, such as vehicle activity, vehicle speeds, vehicle age distributions, and vehicle class distributions. These factors are incorporated into a base scenario, which models the current condition on I-85 with HOV lanes, and a future scenario, which models the implementation of HOT lanes on this corridor. The base scenario mainly uses data from a data collection effort by Georgia Tech during the summer of 2007 on the I-85 corridor, while the future scenario makes alterations to these data using information from other cities that have already implemented HOT lanes.

The MOBILE-Matrix modeling tool, which was recently developed by Georgia Tech [16], was used to run the emissions analysis using the input factors from these data sources. This tool calculated mass emissions for five pollutants: HC, NO_x, CO, $PM_{2.5}$, and PM_{10}. The results show very small increases in mass emissions for NO_x, CO, $PM_{2.5}$, and PM_{10}, and very small decreases in mass emissions for HC. Therefore, the implementation of HOT lanes on I-85 in Atlanta is unlikely to violate the Transportation Conformity Rule. For NEPA purposes, this analysis could be used to make the case that

air quality impacts are not significant, and therefore further detailed analyses are not required.

CHAPTER 1

INTRODUCTION

High Occupancy Toll (HOT) lanes were recently proposed for I-85 in Atlanta as a way to relieve congestion and provide a reliable commute time for 3-person carpools and for other drivers that are willing to pay a toll. The current I-85 HOT lane proposal would not involve construction of new lanes, but would instead convert the existing HOV-2 lanes to HOV-3[1] lanes and use the new excess capacity for toll-paying single occupant vehicles (SOV). This study will focus on air quality concerns by evaluating how the HOT lane conversion on I-85 will affect vehicle total mass emissions due to changes in traffic volumes, vehicle fleet characteristics (such as vehicle age distributions and vehicle class distributions), and changes in operating conditions (such as speeds). In this thesis, emissions will be evaluated for five pollutants: carbon monoxide (CO), hydrocarbons (HC), oxides of nitrogen (NO_X), particulate matter with an aerodynamic diameter of less than or equal to 10 micrometers (PM_{10}), and particulate matter with an aerodynamic diameter of less than or equal to 2.5 micrometers ($PM_{2.5}$).

1.1. Methodology Overview

The goal of this study is to understand how vehicle mass emissions change as a result of implementing HOT lanes on I-85 in Atlanta. This is done calculating the mass

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[1] An HOV-2 lane is a high occupancy vehicle lane allowed to be used by vehicles with two or passengers, while an HOV-3 lane is a high occupancy vehicle lane allowed to be used by vehicles with three or more passengers.

emissions for a base scenario and for a future scenario based on four input factors. Data for the base scenario input factors comes from a field study on the corridor, while the future scenario is primarily based on a literature review that has identified impacts of HOT lanes on emissions model input factors from HOT lanes implemented in other locations around the country.

Fleet differences are modeled in each scenario for peak periods in each direction. The base scenario estimates are preformed for the vehicle fleet that currently uses the I-85 corridor, where the fleet has been delineated using license plate and count data collected by Georgia Institute of Technology during the summer of 2007. The future scenario employs a different vehicle fleet, based upon observed vehicle fleet characteristics from the SR91 lanes in California. Changes in general purpose lane speeds were taken from the MnPass lanes in Minnesota. In addition, changes to speeds and volumes for HOT lanes are based on the assumption that pricing will hold the lane at effective capacity.

Table 1.1 summarizes the data sources for each relevant input into the emissions model for the base and future scenario.

Table 1.1 Sources for Emissions Model Inputs

Emissions Model Inputs	Data Sources for Base Scenario	Data Sources for Future Scenario
Traffic Volumes	Summer Field Study Traffic Count Data	Assumptions Related to Effective Lane Capacity
Vehicle Speeds	ARC Travel Demand Model (TDM) Link-Based Speeds	GP Lanes: MnPass Data HOT Lanes: Effective Lane Capacity Assumptions
Vehicle Age Distribution	Summer Field Study License Plate data	Changes in Composition Based upon SR 91 Data
Vehicle Class Distribution	Summer Field Study Traffic Count Data	Assumed No Change (Lack of Relevant Data)

Mass emissions are calculated by multiplying vehicle activity, measured in vehicle-miles traveled (VMT), by a composite emissions rate (grams/vehicle-mile):

$$ME = VMT * CER$$

Where,
ME = Mass Emissions (grams/hour)
VMT = Vehicle-Miles Traveled (vehicle-miles/hour)
= Traffic Volume (vehicles/hour) * roadway distance
CER = Composite Emissions Rate (grams/vehicle-mile)

The mass emissions can be readily converted to short (US) tons per day (TPD), which is the common expression used in emissions inventories. Each factor that has an impact on mass emissions does so by affecting either the vehicle activity, expressed in VMT, or the composite emissions rate. The composite emissions rate is the average emission rate per vehicle, and is calculated by an emission rate model using the emissions rates for the different vehicle types (classes), vehicle ages, and operating characteristics for the modeled vehicles. Table 1.2 explains how the four input factors considered in this study affect the calculation of mass emissions.

Table 1.2 Effects of Input Factors on Mass Emissions

Input Factor	Affects Vehicle Activity (VMT)	Affects Emission Rate
Traffic Volumes	X	
Vehicle Speeds		X
Vehicle Age Distribution		X
Vehicle Class Distribution		X

Mass emissions are calculated for present and future scenarios using the MOBILE-Matrix/CALINE-Grid, which is Georgia Tech's newly developed air quality impact assessment tool.

To examine the effect of HOT lane implementation on the I-85 corridor, the vehicle activity and composite emission rates for both before and after conversion of

HOV lanes is examined to determine whether emissions will decrease or increase and whether the net change in emissions is significant.

1.2. Scope of the Study

The scope of this study is limited to mass emissions analysis, and does not include a pollutant dispersion analysis. The research will include the total grams of various pollutants emitted from vehicles on the I-85 corridor, but will not predict the concentration of pollutants downwind from the facilities. However, such concentrations (in parts per million) can be predicted using the results of this research through the application of the CALINE-Grid component of the Georgia Tech modeling framework. Pandey (2008) conducted such an analysis for the I-85 corridor in Atlanta, and found very small increases in pollutant concentrations when HOV lanes are converted to HOT lanes [1].

In addition, it should be noted that this study uses a sketch planning analysis approach to estimate changes in traffic volumes and operating conditions, and does not perform a detailed microscopic traffic simulation of the I-85 corridor. Therefore, this research does not consider traffic operations details involving acceleration/deceleration (modal activity), weaving, merging, and on/off ramp movements which are known to affect emission rates. Such modal analysis can be conducted only if detailed modes of operation are known and will be quantifiable once the latest generation of the USEPA emission rate model (MOVES) is approved for use in policy analysis. MOBILE6 emissions model, which uses average speeds, is the currently-approved model and is sufficient for this analysis.

Finally, the study area is limited to I-85 between SR316 in the north and Langford Parkway in the south. The analysis includes only the mainline and does not include ramps or surrounding arterial streets. In addition, the analysis does not consider potential impacts that could result on the regional freeway network (for example, impacts that may result on the I-285 corridor from changes in overall demand) which are expected to be small.

1.3. Document Organization

The remainder of the document is organized into several chapters that focus on the following items:

- **Chapter 2: Literature Review**. This will provide background information through a review of current literature on HOT lanes and emissions:
    - A review of clean air regulations such as conformity rules, NEPA documentation, and Atlanta's nonattainment status, demonstrating the need for a study of emissions impacts of HOT lanes.
    - A review of HOT lanes implemented in other cities across the country that specifically focuses on studies to determine the impacts of HOT lanes on traffic volumes, speeds, and air quality.
    - A review of the cause-effect relationships for vehicle emission rates to identify the factors that may change during the implementation of HOT lanes which will become the focus of the data analysis.
- **Chapter 3: Data Sources and Preparation**. This chapter describes the sources of data that serve as inputs to the emission rate model for the base and future scenarios when such factors differ.

- **Chapter 4: Emissions Analysis and Results.** This chapter describes the emissions analysis tool created by Georgia Institute of Technology used to analyze the impacts on mass emissions across the two scenarios and the mass emissions results for the base and future scenario. The chapter also compares the emissions results to regulatory requirements described in the literature review.
- **Chapter 5: Conclusions.** The conclusions summarize the report, discuss the limitations of the research, and provide policy recommendations.

CHAPTER 2

LITERATURE REVIEW

This section summarizes the regulatory requirements that trigger the need for detailed air quality analyses and the models that are used to provide a quantitative analysis. Transportation conformity and the National Environmental Policy Act (NEPA) are the two main regulatory requirements that may call for a detailed air quality analyses to determine the potential effects of a particular transportation project. These analyses may include regional impact assessments or local (microscale) impact assessments, often called hotspot modeling.

2.1.1. NEPA

The National Environmental Policy Act (NEPA) requires the identification and disclosure of significant environmental impacts for proposed federal projects to decision makers and the public. NEPA applies to all federal projects that have a significant impact on the human environment. Most major transportation projects receive federal funding or require a federal permit, which means that they are federal projects. The potential HOT lane implementation on I-85 in Atlanta is considered to be a federal project. If such a project has a significant environmental impact, then the disclosure requirements of NEPA (preparation of a detailed Environmental Impact Statement) apply. A variety of environmental components are evaluated in the NEPA process, but air quality is often a large part of the evaluation for transportation projects. Practices for NEPA air quality analyses vary by state, but in general most states follow two guidance documents issued by the Federal Highway Administration (FHWA) in the 1980s [2,3]. These documents recommend: 1) detailed analysis (hotspot modeling) for projects with potentially significant environmental impacts that are undergoing an Environmental Impact Statement (EIS), 2) no analysis for projects with no significant environmental impacts that are receiving Categorical Exclusions (CE), and 3) possible detailed analysis for projects that may have significant environmental impacts that are undergoing an Environmental Assessment (EA) to determine whether a full EIS should be required [4]. Simplified analytical procedures, such as lookup tables and screening tools may be particularly applicable to projects undergoing an Environmental Assessment (EA), where it must be determined if a project has potential impacts. If a project undergoes an EA and no impacts are found, the project can receive a Finding of No Significant Impact (FONSI), which exempts the project from conducting a full EIS. To receive a FONSI, the EA must support its conclusions that there are no significant air quality impacts using detailed or pre-approved simplified analytical procedures (screening tools). The methodology employed in this thesis would qualify as this type of simplified analytical procedure to support a FONSI if approved by the transportation conformity modeling working group (EPA and FHWA staff).

2.1.2. Air Quality Planning

The Clean Air Act established the National Ambient Air Quality Standards for pollutants considered harmful to public health, which are called criteria pollutants. The level of primary standards are set to protect human health, while the level of the secondary standards are set to protect public welfare through items such as animals, vegetation, and buildings. Table 2.1 presents the NAAQS levels and their averaging times for all seven criteria pollutants.

A State Implementation Plan (SIP) must be prepared for nonattainment and maintenance areas, which are geographic areas that are not currently meeting National Ambient Air Quality Standards (NAAQS). The SIP provides a plan for how an area will reach attainment of the NAAQS. The SIP considers pollutants from all sources, not just mobile sources, and therefore apportions some of the overall emissions budgeted to reach the NAAQS to motor vehicles. This portion of the overall emissions budget is known as the motor vehicle emissions budget (MVEB) and is expressed in tons of pollutant per day.

Table 2.1 National Ambient Air Quality Standards

	Primary Standards		Secondary Standards	
Pollutant	**Level**	**Averaging Time**	**Level**	**Averaging Time**
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour	None	
	35 ppm (40 mg/m^3)	1-hour		
Lead	1.5 µg/m^3	Quarterly Average	Same as primary standard	
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as primary standard	
Particulate Matter (PM_{10})	150 µg/m^3	24-hour	Same as primary standard	
Particulate Matter ($PM_{2.5}$)	15.0 µg/m^3	Annual (Arithmetic Mean)	Same as primary standard	
	35 µg/m^3	24-hour		
Ozone	0.075 ppm (2008 std)	8-hour	Same as primary standard	
	0.08 ppm (1997 std)	8-hour		
	0.12 ppm	1-hour (Applies only in limited areas)		
Sulfur Dioxide	0.03 ppm	Annual (Arithmetic Mean)	0.5 ppm (1300 µg/m3)	3-hour
	0.14 ppm	24-hour		

The Atlanta metropolitan region is currently a nonattainment area for the 8-hour ozone standard and the annual fine particulate matter ($PM_{2.5}$) standard. Figure 2.1 shows the 20-county 8-hour ozone nonattainment area, and Figure 2.2 shows the annual $PM_{2.5}$

nonattainment area, which is made up of the same 20 counties plus a small portion of Heard and Putnam counties. In addition, the Atlanta region is a maintenance area for the 1-hour ozone standard due to its attainment of the 1-hour ozone standard in 2005. The 1-hour ozone maintenance area differs from the 8-hour ozone nonattainment area because it only contains the 13 counties shown by the red-dotted line in Figure 2.1. Interestingly, because the non-attainment areas are different, and because the potential worst-case meteorology conditions for the 1-hour and 8-hours standards are different, air quality modeling assumptions (such as temperature and humidity) employed in the air quality analyses are also different.

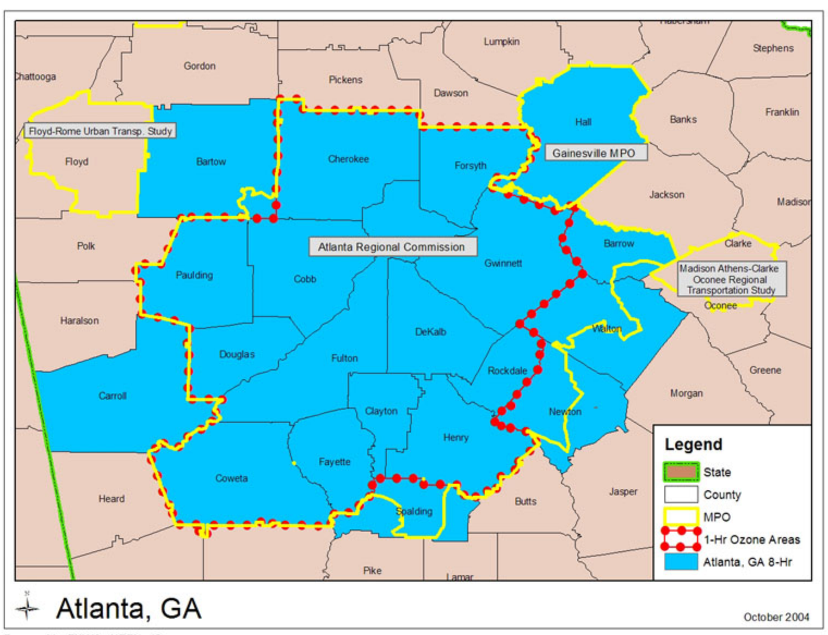

Figure 2.1 Atlanta 8-Hour Ozone Nonattainment Area

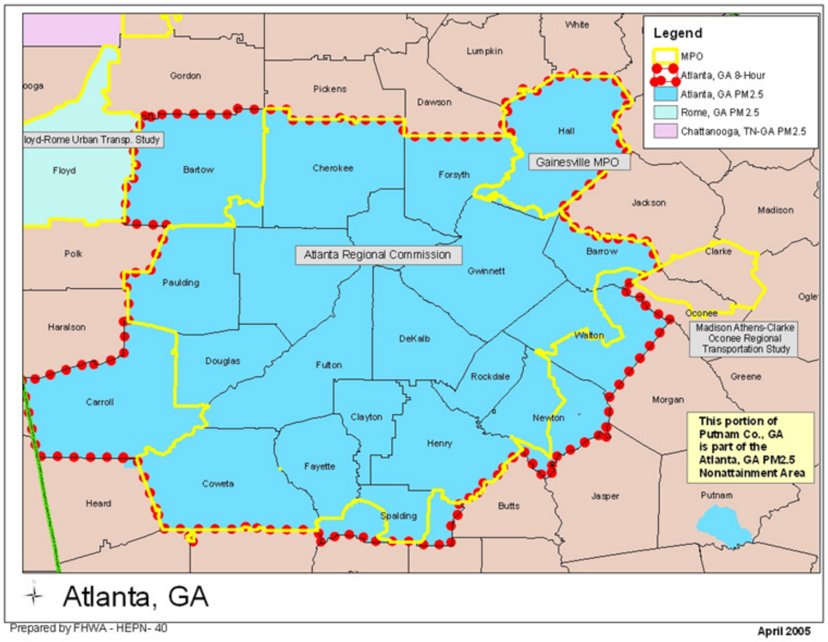

Figure 2.2 Atlanta Annual $PM_{2.5}$ Nonattainment Area

Each time the nonattainment or maintenance status changes, a new SIP must be prepared for the Atlanta region. Each of the three nonattainment or maintenance areas mentioned above have a separate SIP with separate MVEBs. Table 2.2 summarizes the most recent SIPs and MVEBs for the Atlanta metropolitan area.

Table 2.2 Atlanta Current Motor Vehicle Emission Budgets

Nonattainment/Maintenance Standard	Area	Pollutant	MVEB	Budget Year
Atlanta 8-hour Ozone Nonattainment [7] *Designated: April 15, 2004* *SIP Proposed: October 26, 2006* *EPA Approved: April 9, 2007*	20 County	NOx	306.75 TPD	2006
		VOC	172.27 TPD	2006
Atlanta Annual $PM_{2.5}$ Nonattainment *Designated: December 17, 2004* *Proposed SIP expected: Fall 2008*	20 County +2 Partial Counties	$PM_{2.5}$	8.22 TPD*	2008
		NO_x	432.74 TPD*	2008
Atlanta 1-hour Ozone Maintenance *Proposed SIP: December 19, 2004*	13-County	NOx	318.24 TPD	2004-2015
		NOx	121.88 TPD	2015 and after
		VOC	160.80 TPD	2004-2015
		VOC	83.42 TPD	2015 and after

*Since no current SIP is available 2002 base year emissions are used in place of MVEBs

2.1.3. Transportation Conformity

Transportation conformity refers to the requirements set forth by the Federal Clean Air Act Amendments of 1977 and 1990 and the Intermodal Surface Transportation Efficiency Act (ISTEA) of 1991 to ensure that a transportation plan, program, or project will not conflict with State Implementation Plan (SIP) [5]. Since the SIP is a plan to attain the NAAQS, the transportation conformity rule ensures that a project will not create new NAAQS violations, worsen current NAAQS violations, or delay timely attainment of the standards [6]. The emissions inventory from a regional transportation plan (RTP) or transportation improvement program (TIP) is compared to the MVEB to ensure conformity of the RTP or TIP with the SIP. The latest RTP for the Atlanta region, known as Envision6, was completed in August 2007 and compared the projected emissions for the region in 2010, 2020, and 2030 to the MVEBs established in the 2006

Atlanta Early Progress SIP [7]. Because Atlanta is only nonattainment for the 8-hour ozone standard and for the $PM_{2.5}$ standard, conformity analysis is only performed for these pollutants or their precursors. Since no current SIP is available for $PM_{2.5}$ (it is expected in Fall 2008), Envision 6 compared these projected emissions to the 2002 base year emissions, which are used in place of MVEBs. As can be seen in Table 2.3 and Table 2.4, this comparison yielded projected emissions well below the established budgets.

Table 2.3 Envision6 Conformity Determination for Ozone

	NO_x (tpd)	VOC (tpd)
MVEB from 2006 SIP	306.75	172.27
2010 Emissions Projection	229.96	147.46
2020 Emissions Projection	87.45	76.09
2030 Emissions Projection	61.52	80.00

Table 2.4 Envision6 Conformity Determination for $PM_{2.5}$

	$PM_{2.5}$ (average annual tpd)	NO_x (average annual tpd)
Base Year Emissions 2002	8.22	432.85
2010 Emissions Projection	4.62	241.48
2020 Emissions Projection	3.03	92.57
2030 Emissions Projection	3.27	64.75

While detailed air quality analyses are always required to determine conformity of regional transportation plans and programs, the requirements for project-level assessments are more variable. The transportation conformity rule requires that some type of project-level analysis be performed in all nonattainment and maintenance areas to make a conformity determination, but a full quantitative analysis that makes use of air quality models (such as MOBILE and CALINE4) is only required for projects that meet certain criteria. These criteria are different for each pollutant and are specified in 40CFR93.123, but generally deal with intersections with poor levels of service and high traffic volumes or areas previously identified as likely locations where NAAQS violations could occur. Projects that do not fall under one of these criteria can use more simplified and less quantitative analytical procedures, such as lookup tables and various screening procedures, provided the procedures are approved by the Regional Conformity modeling Working Group. A survey of such screening procedures can be found in [8] by Houk and Claggett. Since the I-85 corridor does not fall under any of the conditions stated in 40CFR92.123, this study will use a unique MOBILE-Matrix/CALINE-Grid screening procedure discussed in Chapter 3 and will consider the factors that will change with respect to the implementation of HOT lanes to determine the net effect of the project on facility emissions.

A conformity determination involves not only an air quality analysis of the project, but also comparison of these results with MVEBs. With respect to corridor-level projects, a question arises about what emissions budget to use for comparison. MVEBs are created for entire regions, and not for specific roadways and corridors. Hence, projects are reviewed for conformity in two ways. First, the project must come from a conforming TIP and the project must not change the transportation emissions conditions associated with the conformity determination for the SIP. If this is not the case, then the emissions from the project can not cause the TIP to exceed the MVEB in the SIP [9]. Projects are also judged for conformity by performing a microscale dispersion analysis to see if the concentration of pollutants created by the project will exceed the NAAQS. This is often referred to as hot-spot modeling [6].

Because dispersion analysis is outside the scope of this study, as they are performed separately by Pandey (2008), the analysis reported in this thesis will only examine conformity through the first approach involving mass vehicle emissions in tons per day. I-85 HOT project is not specifically modeled in the latest RTP Envision6, so it is currently not a project that comes from a conforming RTP. This project will need to be adopted as a SIP amendment, which is an administrative action that requires impact documentation. To that end, it must be shown that the emissions from the I-85 HOT project will not cause the MVEB for the entire region to be exceeded. To do this, the calculated mass emissions for I-85 will be compared to the portion of the MVEBs calculated for I-85 during the 2006 SIP for Atlanta's 8-hour ozone nonattainment area [7]. This comparison is presented in Chapter 4 of this report. Based on an analysis of the 2006 SIP emissions results for NOx and VOC, the precursor pollutants for ozone, the I-85 corridor were found to account for about 5% of the MVEB for the entire region as shown in Table 2.5.

Table 2.5 I-85 Portion of Motor Vehicle Emissions Budgets

	NOx	VOC
I-85 MVEB Portion (tpd)	16.48	7.54
Total MVEB (tpd)	306.75	172.27
I-85 as Percent of Total MVEB	5.37%	4.38%

The isolated I-85 corridor motor vehicle emission budgets presented here will be compared to the calculated emissions from scenarios before and after HOT lane implementation. This is done by examining the changes in vehicle activity and composite emission rates to determine whether emissions will decrease or increase and whether the net change in emissions is significant.

2.2. HOT Lanes in Other Cities

HOT lanes have been implemented in a number of cities around the country and several studies have been completed to understand the impacts that these lanes have on a number of factors that affect air quality. HOT implementation can affect traffic volumes, vehicle speeds, and even vehicle age distributions across different lanes. The following list contains most of the HOT lanes currently in operation in the United States:

- State Route 91 Express Lanes, CA (Los Angeles area)
- Interstate 15 Express Lanes, San Diego, CA
- Houston QuickRide, I-10 and US290, Houston, TX
- MnPass Interstate 394, Minneapolis, MN
- Interstate 25 / US36, Denver, CO

2.2.1. Emission Modeling Input Factor Studies

A number of studies have been conducted that observe how several factors that affect emission modeling change after the implementation of HOT lanes. Specifically, a report on the I-394 MnPass Lanes in Minneapolis quantifies changes in traffic volumes and speeds. Also, a report on SR 91 Express Lanes in California quantified vehicle fleet characteristics[13].

The MnPass lanes were evaluated before and after the implementation of HOT lanes, which occurred on May 16th, 2005 [10]. This evaluation concluded that speeds on the managed lane remained unchanged or slightly increased after the implementation of

HOT lanes. That is, the HOV and HOT lanes both run at uncongested speeds. Specifically, observed HOT lanes changes in speed ranged from -2.6% to 4.0% (but the one observed decrease in speed was determined to be not statically significant). Because HOT lanes carry more vehicles per hour than HOV lanes (more vehicles can be accommodated in the HOT lane and variable pricing ensures that demand for the facility does not exceed capacity), traffic congestion is actually reduced on the general purpose lanes when HOT lanes are implemented. The increase in speed on the MnPass general purpose lanes ranged from 0.4% to 14.6% [10]. Further explanation on the use of this speed data for this study can be found in Section 3.3.2.

In terms of traffic volumes, the technical evaluation for Minneapolis found that overall the corridor experienced an increase in traffic volume of 5% for the general purpose (GP) and MnPass HOT lanes combined, which demonstrates that the HOT lane implementation is helping to more efficiently utilize the corridor's capacity. When breaking the corridor down into the reversible lane, barrier separated section and the concurrent flow diamond lane section, the results appeared to be different. The reversible lane section was found have volume increases as large 14% and 30% at various locations on the HOT lane, but the diamond lane section observed smaller increases in volume on the HOT lane and slight decreases in volume on the general purpose lane. These results for the diamond lane section were reported with the warning the volume data from this section may unreliable due to the fact that the operating hours of the HOV restrictions changed during the study.

The proposed I-85 HOT lanes in Atlanta most closely resemble the diamond lane section of the MnPass lanes. However, the MnPass warning on reliability of their traffic volume data led to the conclusion that their change in traffic volume data should not be used directly in a study of the Atlanta system. Instead, the speed-flow diagrams for the i-85 system were used to identify the increase in traffic volume on the Atlanta HOT lane, and the noted relative changes between the general purpose and HOT lane volumes in Minnesota were used to quantify the share of HOT lane volume increases that are likely to come from the GP lane and from latent demand (new vehicles using the corridor because congestion is reduced). Specifically, using only data from the MnPass reversible lane section, which was also deemed by MnDOT to be the most reliable, 77.2% of the HOT lane volume increases is due to a volume decrease in the GP lane, and the remaining 22.8% of the increase is due to latent demand for extra capacity in the corridor [10]. For the remainder of this document 77.2% will be referred to as the general purpose to HOT share (GP-HOT share) and 22.8% will be referred to as the latent demand to HOT share (LD-HOT share). Further explanation on the use of this data for this study can be found in Section 3.2.2.

The HOT lanes on SR91 in southern California were studied by Barth [13] to determine the fleet characteristics of vehicles traveling in both the general purpose and HOT lanes. A license plate study was used to determine that the fleet in the HOT lane is represented by more of the newer model year vehicles and fewer of the older model year vehicles than the general purpose lane. More details on this study and explanation of how it is applied to I-85 in Atlanta can be found in Section 3.4.2.

2.3. Cause Effect Relationships

There are a number of factors that occur in the real world that have an impact on vehicle emissions. The relationships between these factors and the resulting vehicle emissions are know as cause effect relationships. The following list describes cause effect relationships commonly considered in emissions modeling and determines whether or not each element is important to include each one in this study. This determination mainly depends on whether or not the implementation of HOT lanes on I-85 will cause a change in any of the factors between the base and future scenario.

- **Fuel**—Characteristics of fuel, such as the Reid vapor pressure and the sulfur content of fuel help determine vehicle emissions. Because all vehicles in this study will be using the same fuel type for the entire region both before and after HOT implementation, this factor will be ignored.
- **Inspection & Maintenance (I/M)**—Regional programs that require vehicles to be inspected for defects in the emission control devices and that require any defects found to be repaired have been shown to have a positive impact on reducing emissions. The Atlanta metropolitan area has such a program that was included for calculating the base emission rates for both the base and future scenarios. While HOT lanes could possibly alter the percentage of vehicles from outside of the metropolitan area that are not subject to the I/M program, it is suspected that the impact of these changes would be negligible. Therefore, no changes in inspection and maintenance programs are modeled.
- **Vehicle Activity**—The number of engine starts and the vehicle miles traveled together make up vehicle activity. HOT lanes may cause a slight increase in the number of trips to be made, due to latent demand for the extra capacity created by HOT lanes, but this will be ignored in this study given its small impact. It is believed that HOT lanes will increase the number of vehicle

miles traveled (VMT) due to the extra capacity created by efficiency of pricing the lanes to keep demand immediately under capacity. Therefore, changes in VMT will be considered in the study.

- **Fleet Composition**—The age of vehicles affects vehicle emissions since newer vehicles incorporate new emissions control technology and more efficient engines. HOT lanes are believed to increase the amount of newer vehicles due to the fact that high income drivers that are willing to pay the toll generally drive newer vehicles. Therefore, the impact of changes in vehicle age will be included in the study. The makeup of the fleet in terms of vehicle classes also impacts emissions because different types of vehicles create pollutants at different rates. However, it is believed that any changes in the mix of vehicle types will be minimal due to HOT lanes, and therefore, the change in vehicle class distributions will not be included in the study.

CHAPTER 3

DATA SOURCES AND PREPARATION

This chapter describes the sources of data and methods of preparing the data for use as inputs into the vehicle emission rate model, which will be described in the next chapter. A large portion of the data used as inputs is derived from a data collection effort conducted by Georgia Tech during the summer of 2007 on the I-85 corridor in Atlanta. This data collection effort, which will be referred to hereafter as the summer field study, collected both volume counts and license plate data at six locations along the I-85 corridor. These locations can be seen in Figure 3.1. Five of the six observation locations fall within the geographic boundaries for this study, which are between SR 316 in the north and Langford Parkway in the south. The Flat Shoals Rd. site falls outside this study area and does not have an HOV lane; therefore, it was not used in this study. The data were collected at a level of detail that allows for division by lane type, time-of-day, direction, and observation site. These divisions yield 40 combinations of each of these variables as shown in Table 3.1.

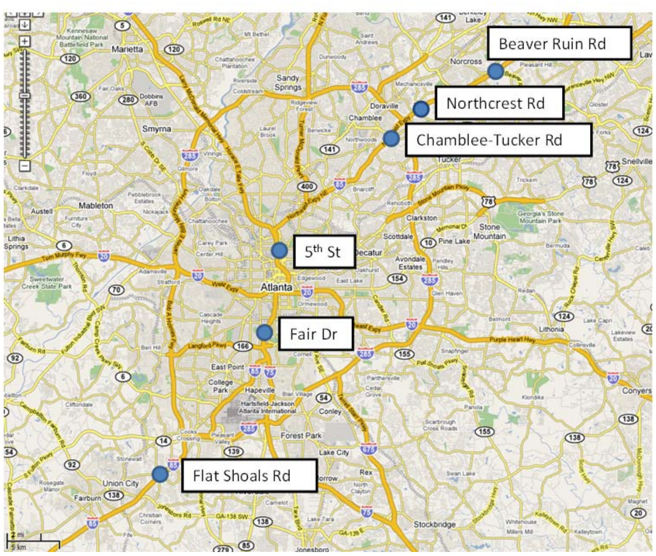

Figure 3.1 I-85 Observation Sites

Table 3.1 Level of Detail for Summer Field Data

Lane Type	Time	Direction	Section	Observation Site
GP	AM	NB	1	Fair Dr.
GP	AM	NB	2	Fifth St.
GP	AM	NB	3	Chamblee Tucker Rd.
GP	AM	NB	4	Northcrest Rd.
GP	AM	NB	5	Beaver Ruin Rd.
GP	AM	SB	1	Fair Dr.
GP	AM	SB	2	Fifth St.
GP	AM	SB	3	Chamblee Tucker Rd.
GP	AM	SB	4	Northcrest Rd.
GP	AM	SB	5	Beaver Ruin Rd.
GP	PM	NB	1	Fair Dr.
GP	PM	NB	2	Fifth St.
GP	PM	NB	3	Chamblee Tucker Rd.
GP	PM	NB	4	Northcrest Rd.
GP	PM	NB	5	Beaver Ruin Rd.
GP	PM	SB	1	Fair Dr.
GP	PM	SB	2	Fifth St.
GP	PM	SB	3	Chamblee Tucker Rd.
GP	PM	SB	4	Northcrest Rd.
GP	PM	SB	5	Beaver Ruin Rd.
HOV	AM	NB	1	Fair Dr.
HOV	AM	NB	2	Fifth St.
HOV	AM	NB	3	Chamblee Tucker Rd.
HOV	AM	NB	4	Northcrest Rd.
HOV	AM	NB	5	Beaver Ruin Rd.
HOV	AM	SB	1	Fair Dr.
HOV	AM	SB	2	Fifth St.
HOV	AM	SB	3	Chamblee Tucker Rd.
HOV	AM	SB	4	Northcrest Rd.
HOV	AM	SB	5	Beaver Ruin Rd.
HOV	PM	NB	1	Fair Dr.
HOV	PM	NB	2	Fifth St.
HOV	PM	NB	3	Chamblee Tucker Rd.
HOV	PM	NB	4	Northcrest Rd.
HOV	PM	NB	5	Beaver Ruin Rd.
HOV	PM	SB	1	Fair Dr.
HOV	PM	SB	2	Fifth St.
HOV	PM	SB	3	Chamblee Tucker Rd.
HOV	PM	SB	4	Northcrest Rd.
HOV	PM	SB	5	Beaver Ruin Rd.
GP=General Purpose; HOV=High Occupancy Vehicle; NB=Northbound; SB=Southbound				

The count data were used to provide total volumes and vehicle class distributions for each combination of variables shown in Table 3.1. The license plate data were used to provide vehicle age distributions by retrieving model year information from the Georgia registration database for the observed vehicles. More details on this method can be found in Section 3.4.

3.1. Roadway Geometry

The roadway geometry for the study area comes from the Atlanta Regional Commission's (ARC) regional travel demand model (TDM). The TDM contains a set of links that represent segments of roadways. A new link is used whenever characteristics of the roadway change, such as the number of lanes. This analysis uses several fields of data from the TDM including distance, number of lanes, facility type, and XY coordinates for link end points. The coordinates are not actually used in the emissions calculations, but calculations are performed for each link and the coordinates are used to map the links in a Geographic Information System (GIS) for visualization purposes..

The I-85 links were separated from the rest of the roadway links for the region by selecting them within the GIS. In addition, this method was used to divide the links into sections that correspond with the five observations sites that fall within the study area. Divisions for these sections were determined by locating interchanges with major highways, such as I-20, I-75, and I-285. Table 3.2 describes how each observation site corresponds to the boundaries for each section, while Figure 3.2 presents the same information in a map.

Table 3.2 I-85 Corridor Section Descriptions

Section	Observation Site	Section Boundaries		Distance (miles)	Total # of Links	Number of GP Lanes Per Direction	
		Beginning	End			Minimum	Maximum
1	Fair Dr.	Langford Pkwy.	I-20	4.5	68	4	7
2	Fifth St.	I-20	I-75	4.5	121	3	7
3	Chamblee Tucker Rd.	I-75	I-285	11	95	4	6
4	Northcrest Rd.	I-285	Jimmy Carter Blvd.	3.5	21	4	6
5	Beaver Ruin Rd.	Jimmy Carter Blvd.	SR 316	7.5	48	5	6
Corridor Total		Langford Pkwy.	SR 316	31	353	3	7

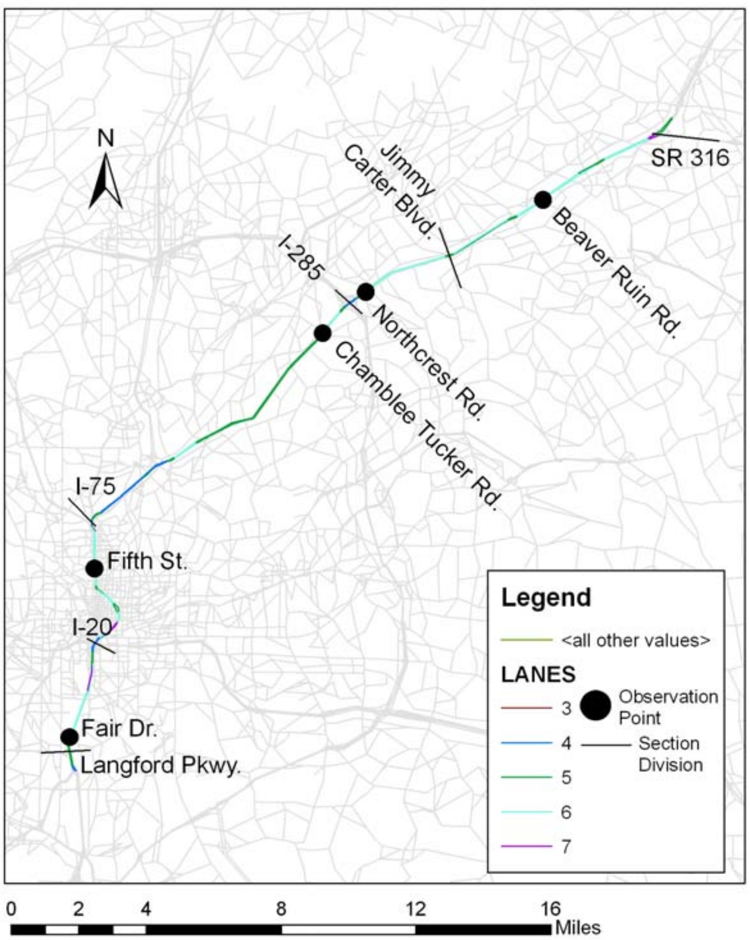

Figure 3.2 Map of I-85 Sections

3.2. Vehicle Activity

As explained in Section 1.1, vehicle activity does not affect the emission rate, but rather is multiplied by the emission rate to calculate the mass emissions. The vehicle activity is measured in vehicle-miles traveled (VMT), which is calculated by multiplying a roadway's traffic volume (vehicles traversing per hour) by the distance of that roadway to obtain vehicle-miles of travel per hour. Since roadway distance is already known for each link from the TDM this section will describe the sources of volumes. The base scenario uses volumes from the summer field study count data, while the future scenario applies changes to these volumes based on assumptions about effective capacity of the HOT lane.

3.2.1. Volumes for Base Scenario

Volumes for the I-85 base scenario come from summer field study count data. These data were collected on JAMAR™ count boards for 60-75 minutes for three separate days (Monday, Wednesday, Friday) for each site, time, and direction combination. The observations occurred between 7-9AM for the AM peak and between 4:30-6:30 PM for the PM peak. During this two-hour period the data collection team collected both northbound and southbound data by collecting one direction for the first hour and then switching to the opposite direction for the second hour. The count data were collected on the JAMAR™ boards either in the field or in the lab by watching videos taken in the field. The data were collected by individual lane; therefore, it was possible to separate the general purpose and HOV lane volumes. Table 3.3 shows the volumes derived from the summer field study count data. These volumes are averaged over the three days observed and scaled down to one hour if the count lasted longer than one hour. The general purpose lane volumes represent an average of all general purpose lanes observed at the site. The volumes from Table 3.3 are applied to the appropriate links for each section based on time-of-day and direction. Then these per lane volumes are multiplied by the number of lanes for each link to obtain the total volume per hour for that link. These data are shown in Appendix A due to the large number of links.

Table 3.3 Volumes from Summer Field Study Counts

Section	Observation Site	Time	Direction	GP Volume/ln/hr	HOV Volume/ln/hr
1	Fair_Dr	AM	NB	1507	1145
2	Fifth_St	AM	NB	1924	1336
3	Chamblee_Tucker_Rd	AM	NB	951	161
4	North_Crest_Rd	AM	NB	980	161
5	Beaver_Ruin_Rd	AM	NB	1367	248
1	Fair_Dr	AM	SB	870	231
2	Fifth_St	AM	SB	1625	1130
3	Chamblee_Tucker_Rd	AM	SB	1766	872
4	North_Crest_Rd	AM	SB	1398	1118
5	Beaver_Ruin_Rd	AM	SB	1824	1373
1	Fair_Dr	PM	NB	1154	433
2	Fifth_St	PM	NB	1753	1297
3	Chamblee_Tucker_Rd	PM	NB	1529	847
4	North_Crest_Rd	PM	NB	1170	1152
5	Beaver_Ruin_Rd	PM	NB	1545	1181
1	Fair_Dr	PM	SB	1707	864
2	Fifth_St	PM	SB	1256	1365
3	Chamblee_Tucker_Rd	PM	SB	1074	387
4	North_Crest_Rd	PM	SB	909	321
5	Beaver_Ruin_Rd	PM	SB	1404	502
NB=Northbound; SB=Southbound					

3.2.2. Volumes for Future Scenario

While it would be possible to derive traffic volume data from modeling sources, such as a traffic simulation model or a regional travel demand model (TDM), these were determined to be inappropriate for this study. A travel demand model would not typically be sensitive enough to small changes on a single corridor, while creating a traffic simulation model for the corridor would be require large amounts of time and resources that exceed those available to this project. Instead, a sketch planning approach was taken, which relies on the basic operating principles of HOT lanes. These operating principles are based in the fundamental traffic engineering concepts of capacity and speed-flow relationships as explained below.

HOT lanes operate on the concept that pricing can be used to adjust the demand for that particular lane so that the traffic volumes are held right below the capacity of the lane. Holding the demand at right below capacity prevents a break-down in the flow to the congested section of the speed-flow curve as shown in Figure 3.3. When the demand exceeds capacity it results in lower speeds and a decrease in flow, as shown in the bottom portion of the curve. This is an inefficient operation of the roadway because the roadway can not handle as many vehicles in the same amount of time.

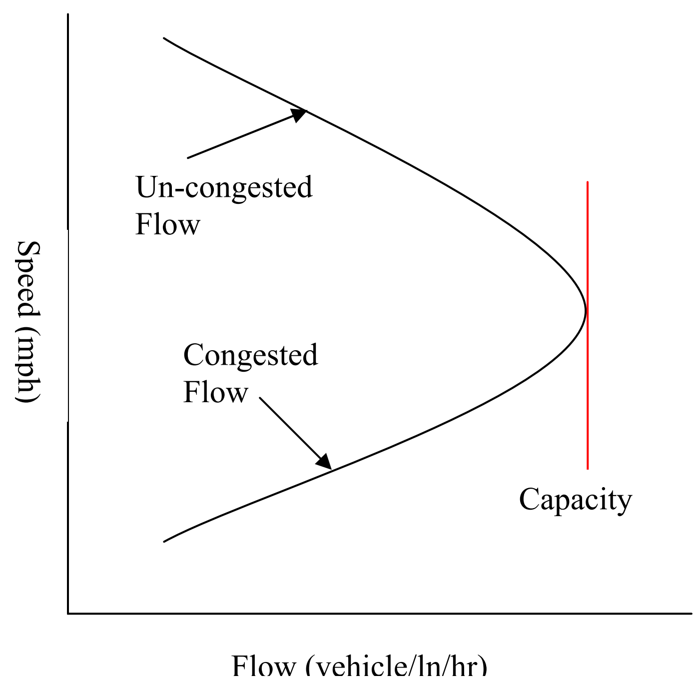

Figure 3.3 Speed-Flow Relationship

Research by Guin, et al. [11] on I-85 in Atlanta has determined that the capacity of an HOV lane is lower than the capacity of a general purpose lane. This research used data from the Georgia Navigator system to determine the effective capacity for an HOV lane and the adjacent general purpose lane on a stretch of I-85 from I-285 to SR 316. The researchers found that the effective capacity for the I-85 HOV lane is approximately 1500 vehicles per hour, occurring at 40 mph. The general purpose lane effective capacity is higher, at around 2500 vehicles per hour. These values can be observed on the actual speed-flow diagrams in Figure 3.4, which were developed using the Georgia Navigator data. This research cited safety concerns of the HOV drivers associated with vehicles jumping into or out of the HOV lane as the main reason for the lower effective capacity in the HOV lane [11].

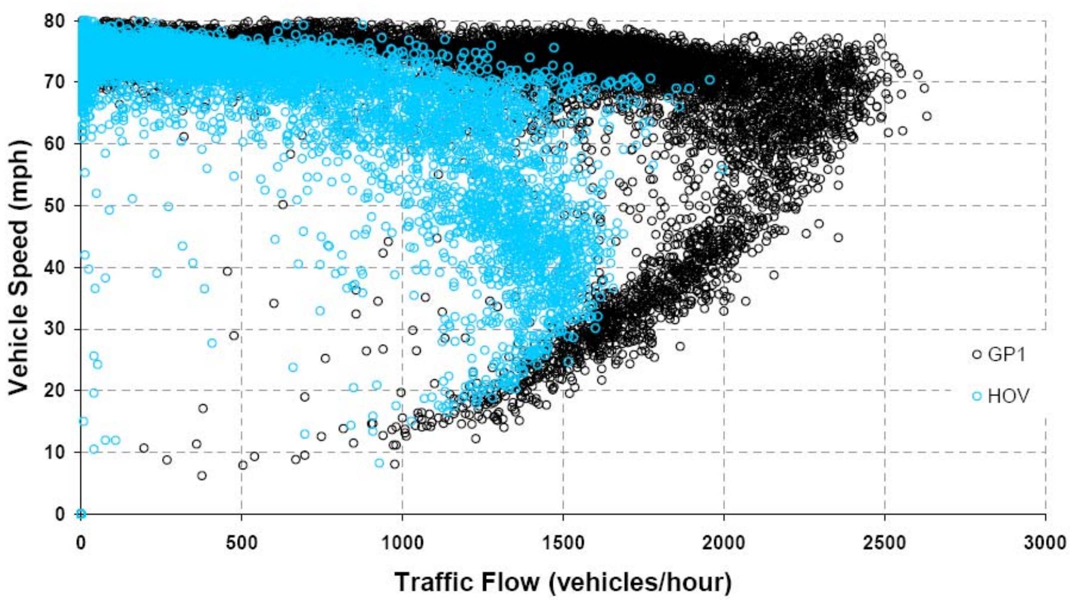

Figure 3.4 Georiga Navigator Speed Flow Diagram (Source: Guin [11])

To estimate the volume reductions on the general purpose lanes a comparison was made between the volume increases on the HOT lanes and the volume reductions on the general purpose (GP) lanes. In theory, much of the volume increase on the HOT lane is due to vehicles in the GP lanes paying to switch to the faster HOT lanes. The remaining volume increase on the HOT lane likely comes from the latent demand for extra capacity in the corridor. For example, travelers that would have not taken the trip or would have taken a different route are now choosing to use the extra capacity in the HOT lane. Data from the MnPass HOT lane project in Minneapolis, MN revealed that the GP lane volume decrease is 77.2% of the HOT lane volume increase [12]. This suggests that the GP-HOT share of 77.2% can be attributed to GP lane vehicles paying to switch to the HOT lane, while the remaining 22.8% makes up the LD-HOT share.

Several assumptions were made in order to predict the changes in volume on I-85 after conversion of the HOV lane to an HOT lane. These assumptions explain how the calculations were conducted:

- Pricing will be implemented on concurrent flow lanes, similar to the current HOV configuration on I-85, and the implementation will not involve barrier-separated lanes. Therefore, pricing will keep demand for the HOT lane at the effective capacity of 1500 vehicles per hour. The volume for HOT links will be increased by the amount that results in a final volume of 1500 vehicles per hour. These changes are only made for the peak time and direction, such as AM southbound for section in the north and AM northbound for section in the south. The opposite directions apply in the afternoon. Due to its central location, the Fifth Street section is assumed to be peak in both directions at both times of day.

- There will be a small amount of latent demand for the extra volume handled by the HOT lane. From the Minnesota data it is assumed the GP-HOT share is 77.2% and the LD-HOT share is 22.8%. The latent demand will come from other sources, such as vehicles that would otherwise not have taken the trip or would have taken a different route. Therefore, the volume of the volumes on the general purpose lanes will be reduced by 77.2% of the increase in volumes on corresponding HOT lanes in the same time, direction, and section. As explained in the first bullet, these changes are only applied in the peak time and direction.
- The HOT lane will only allow HOV3+ vehicles to travel for free. While some of the HOV2 vehicles will be forced to move to the GP lane, others may choose to pay the toll to use the HOT lane. It is assumed that total demand stays constant after HOT implementation; therefore, the volumes do not have to be adjusted for this switch.
- Eliminating the HOV2 vehicles' free use of the HOV lane will not break up any two-person carpools and increase demand by creating more single occupant vehicles (SOV). This is likely because many HOV2 carpools are with family members that will ride together no matter if there is an incentive or not and because other factors, such as increasing gas prices will provide incentive for non-family carpools to stay intact.

The assumptions listed above are summarized in Table 3.4, and are applied to the base volumes to obtain the results listed in Table 3.5. It should be noted that the general purpose lane volume reductions shown in the last column of the table will be applied to the total volume for all general purpose lanes, not the per lane volume. It is important to apply the reductions in this manner because they represent vehicles moving from any of the multiple general purpose lanes into the single HOT lane. Since each general purpose link has a different number of lanes and therefore a different total volume, the future GP volumes are not shown here due to the large number of links. The complete link-by-link volumes can be found in Appendix A.

Table 3.4 Volumes Applied for Future Scenario

Volumes Applied for Future Scenario	Lane Type	Time, Direction, Section (Observation Site)
1500 vehicles per hour to correspond to effective capacity	HOT	AM, NB, 1 (Fair Dr.) AM, NB, 2 (Fifth St.) AM, SB, 2 (Fifth St.) AM, SB, 3 (Chamblee Tucker Rd.) AM, SB, 4 (Northcrest Rd.) AM, SB, 5 (Beaver Ruin Rd.) PM, NB, 2 (Fifth St.) PM, NB, 3 (Chamblee Tucker Rd.) PM, NB, 4 (Northcrest Rd.) PM, NB, 5 (Beaver Ruin Rd.) PM, SB, 1 (Fair Dr.) PM, SB, 2 (Fifth St.)
Volumes decreased by 77.2% of the volume increase on the corresponding HOT lane in the same time, direction, and section	GP	AM, NB, 1 (Fair Dr.) AM, NB, 2 (Fifth St.) AM, SB, 2 (Fifth St.) AM, SB, 3 (Chamblee Tucker Rd.) AM, SB, 4 (Northcrest Rd.) AM, SB, 5 (Beaver Ruin Rd.) PM, NB, 2 (Fifth St.) PM, NB, 3 (Chamblee Tucker Rd.) PM, NB, 4 (Northcrest Rd.) PM, NB, 5 (Beaver Ruin Rd.) PM, SB, 1 (Fair Dr.) PM, SB, 2 (Fifth St.)
Same as Base Scenario	GP, HOT	AM, NB, 3 (Chamblee Tucker Rd.) AM, NB, 4 (Northcrest Rd.) AM, NB, 5 (Beaver Ruin Rd.) AM, SB, 1 (Fair Dr.) PM, NB, 1 (Fair Dr.) PM, SB, 3 (Chamblee Tucker Rd.) PM, SB, 4 (Northcrest Rd.) PM, SB, 5 (Beaver Ruin Rd.)

Table 3.5 Calculations for Future Volumes

Section	Observation Site	Time	Direction	Volume/hr			
				HOV Base	HOT Future	HOV Change	GP Change
1	Fair Dr	AM	NB	1145	1500	355	-274
2	Fifth St	AM	NB	1336	1500	164	-127
3	Chamblee Tucker Rd	AM	NB	161	161	0	0
4	Northcrest Rd	AM	NB	161	161	0	0
5	Beaver Ruin Rd	AM	NB	248	248	0	0
1	Fair Dr	AM	SB	231	231	0	0
2	Fifth St	AM	SB	1130	1500	370	-286
3	Chamblee Tucker Rd	AM	SB	872	1500	628	-485
4	Northcrest Rd	AM	SB	1118	1500	382	-295
5	Beaver Ruin Rd	AM	SB	1373	1500	127	-98
1	Fair Dr	PM	NB	433	433	0	0
2	Fifth St	PM	NB	1297	1500	203	-157
3	Chamblee Tucker Rd	PM	NB	847	1500	653	-504
4	Northcrest Rd	PM	NB	1152	1500	348	-269
5	Beaver Ruin Rd	PM	NB	1181	1500	319	-246
1	Fair Dr	PM	SB	864	1500	636	-491
2	Fifth St	PM	SB	1365	1500	135	-104
3	Chamblee Tucker Rd	PM	SB	387	387	0	0
4	Northcrest Rd	PM	SB	321	321	0	0
5	Beaver Ruin Rd	PM	SB	502	502	0	0

3.3. Vehicle Operating Speeds

Vehicle speed is an input factor that affects the emission rate portion of the mass emissions calculation. The base scenario uses speeds from the ARC travel demand model, which provides speed on a link-by-link basis. The future scenario applies changes to these speeds using assumptions about effective capacity of HOT lanes and trends in general purpose lane speeds associated with the implementation of HOT lanes in Minneapolis, MN.

3.3.1. Speeds for Base Scenario

Speeds for the base scenario were obtained from a 2006 run of the ARC travel demand model that was conducted for the 2006 SIP for 8-hour ozone nonattainment [7]. The speeds for the AM and PM time period were used to correspond to the volume data collected during the summer field study. The Georgia Environmental Protection Division (EPD) made a database of the TDM results available for download from its webpage. This is the same data described in Section 3.1 to define roadway characteristics. Because the speeds are different for each of the 353 links they are summarized by the maps in Figure 3.5 and Figure 3.6 and presented in detail in Appendix A.

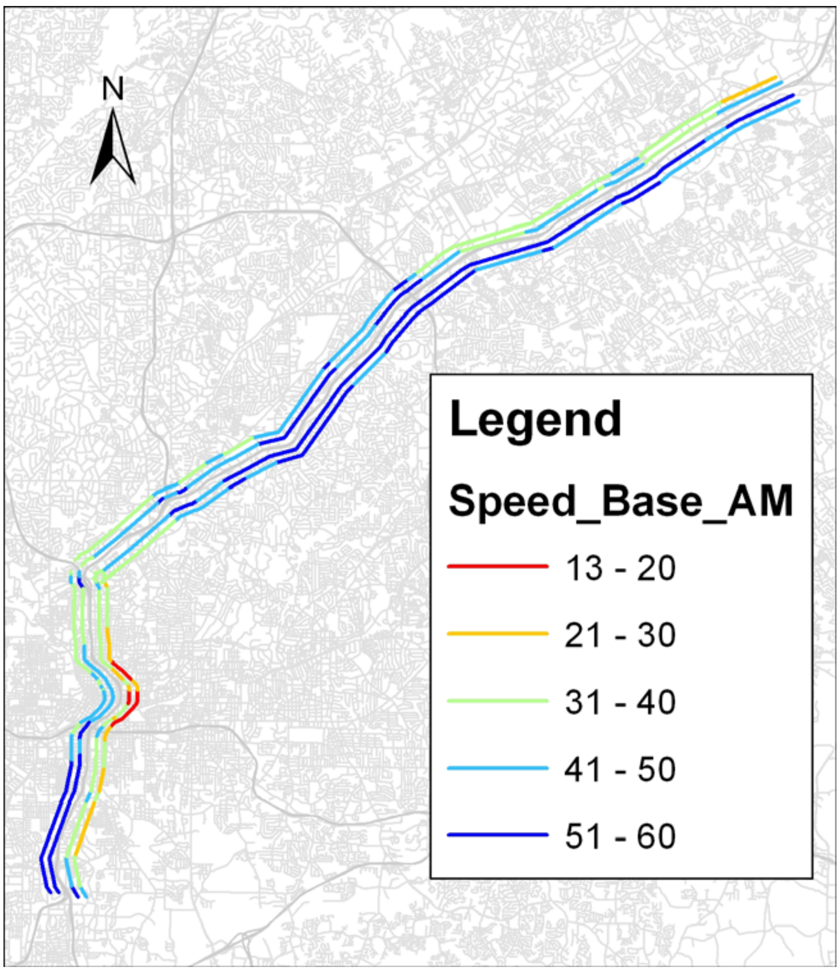

Figure 3.5 Speeds for AM Base Scenario

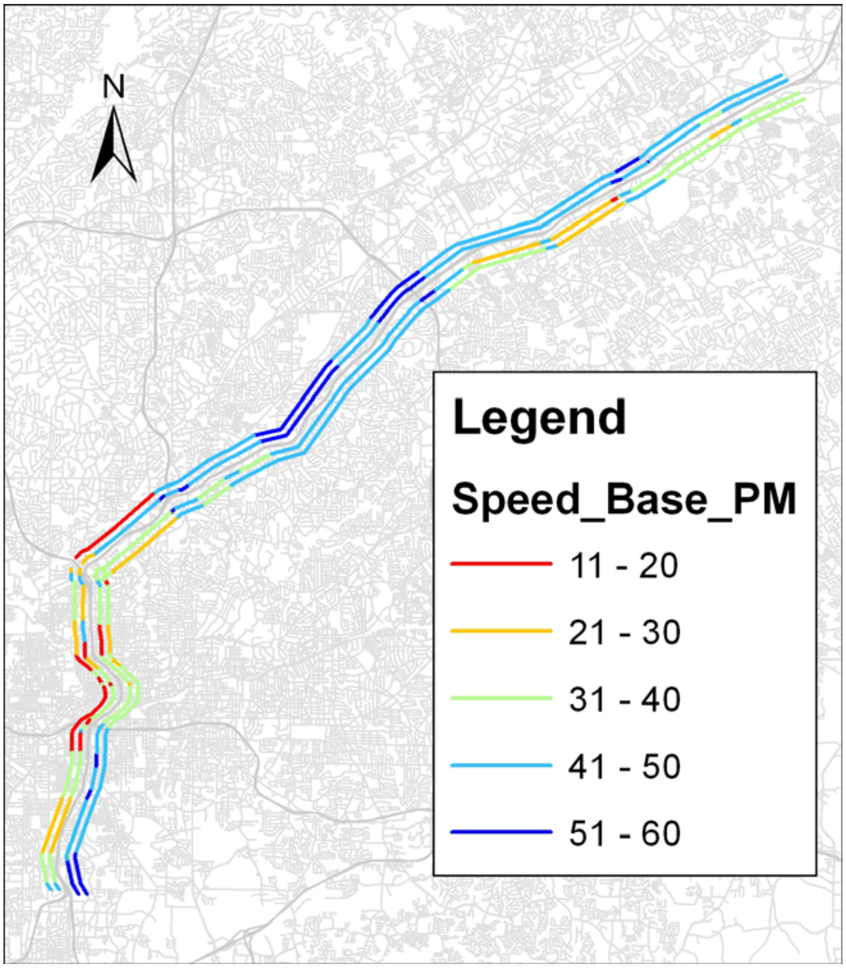

Figure 3.6 Speeds for PM Base Scenario

3.3.2. Speeds for Future Scenario

Changes to speed were made for the future scenario only for the links in the peak time and direction, such as AM southbound for northern observation sites. Fifth Street is considered to have peak conditions during all times and directions. All HOT links in the peak time and direction were assumed to operate at 40 mph, which is the speed that corresponds to the effective capacity of 1500 vehicles per hour applied to the HOT links based on previous research on the I-85 [11]. For the GP links in the peak time and direction, data on changes in speed on I-394 associated with the HOT lane implementation in Minneapolis were applied. This data showed a 4.2% increase in speed for GP lanes during the AM and a 4.1% increase in speed for GP lanes during the PM

[12]. These values were taken from the diamond lane section of I-394, which resembles the proposed configuration on I-85 in Atlanta. These changes for the future scenario are summarized in Table 3.6. The resulting speeds are summarized in maps in Figure 3.7 and Figure 3.8 and presented in detail for each individual link in Appendix A.

Table 3.6 Speeds Applied for Future Scenario

Speeds Applied for Future Scenario	Lane Type	Time, Direction, Section (Observation Site)
40 mph to correspond to effective capacity	HOT	AM, NB, 1 (Fair Dr.) AM, NB, 2 (Fifth St.) AM, SB, 2 (Fifth St.) AM, SB, 3 (Chamblee Tucker Rd.) AM, SB, 4 (Northcrest Rd.) AM, SB, 5 (Beaver Ruin Rd.) PM, NB, 2 (Fifth St.) PM, NB, 3 (Chamblee Tucker Rd.) PM, NB, 4 (Northcrest Rd.) PM, NB, 5 (Beaver Ruin Rd.) PM, SB, 1 (Fair Dr.) PM, SB, 2 (Fifth St.)
Speed increased 4.2% from base scenario	GP	AM, NB, 1 (Fair Dr.) AM, NB, 2 (Fifth St.) AM, SB, 2 (Fifth St.) AM, SB, 3 (Chamblee Tucker Rd.) AM, SB, 4 (Northcrest Rd.) AM, SB, 5 (Beaver Ruin Rd.)
Speed increased 4.1% from base scenario	GP	PM, NB, 2 (Fifth St.) PM, NB, 3 (Chamblee Tucker Rd.) PM, NB, 4 (Northcrest Rd.) PM, NB, 5 (Beaver Ruin Rd.) PM, SB, 1 (Fair Dr.) PM, SB, 2 (Fifth St.)
Same as Base Scenario	GP, HOT	AM, NB, 3 (Chamblee Tucker Rd.) AM, NB, 4 (Northcrest Rd.) AM, NB, 5 (Beaver Ruin Rd.) AM, SB, 1 (Fair Dr.) PM, NB, 1 (Fair Dr.) PM, SB, 3 (Chamblee Tucker Rd.) PM, SB, 4 (Northcrest Rd.) PM, SB, 5 (Beaver Ruin Rd.)

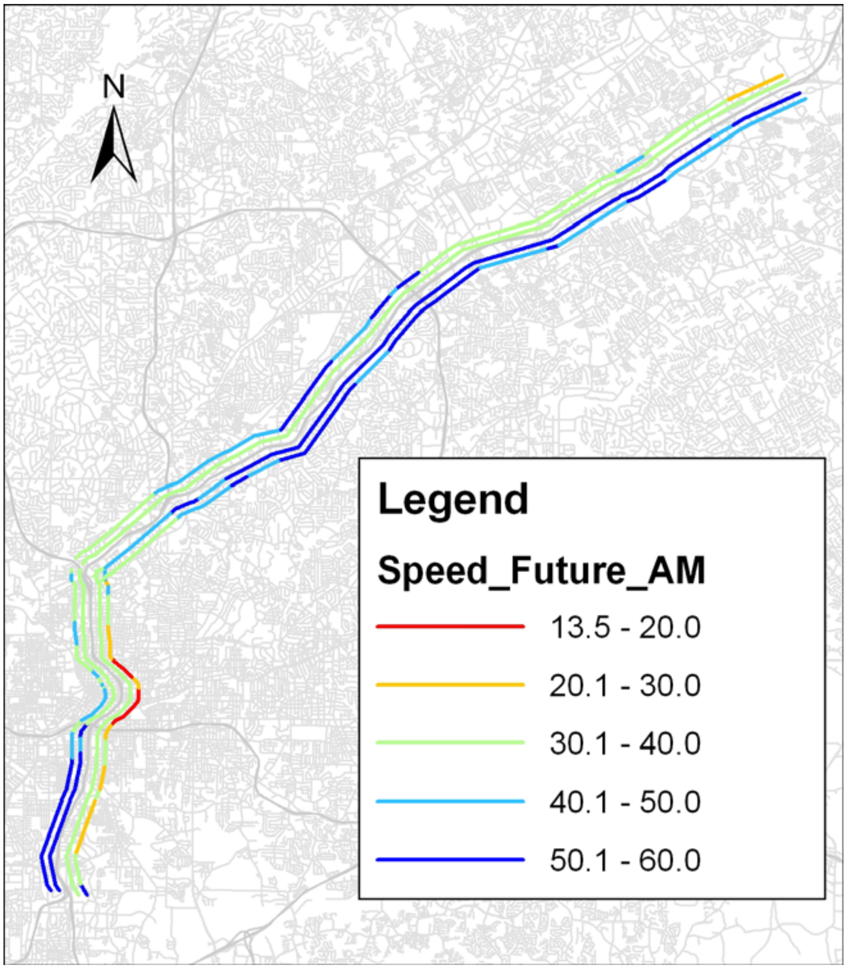

Figure 3.7 Speeds for AM Future Scenario

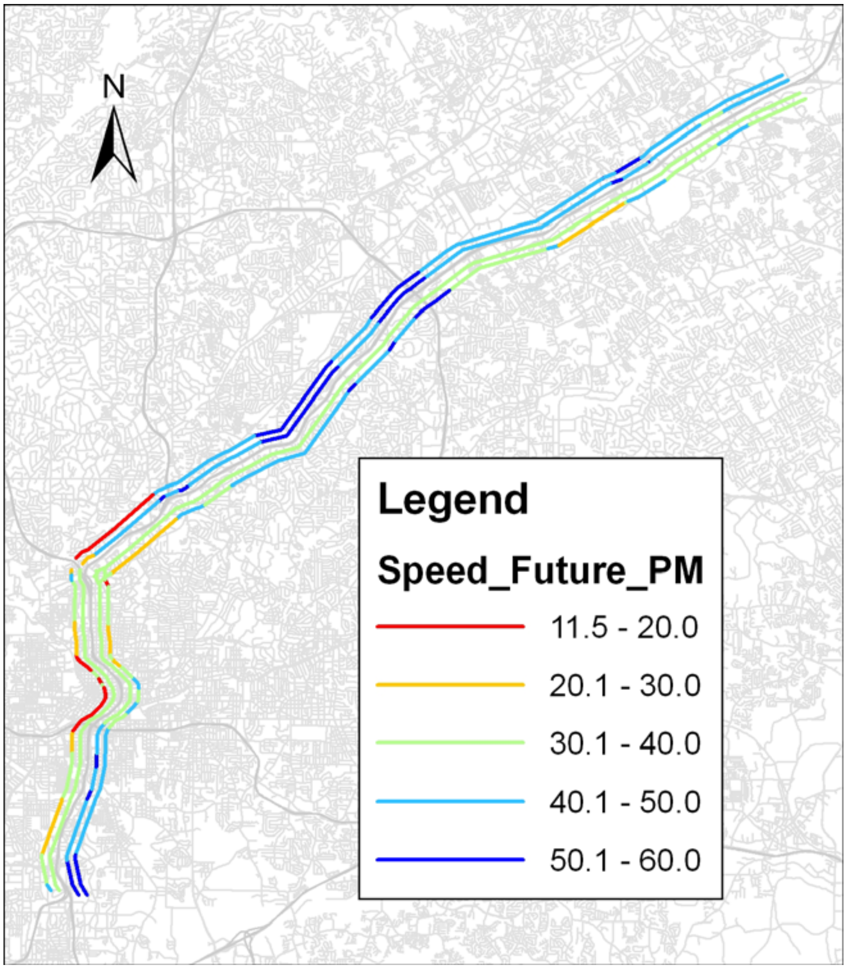

Figure 3.8 Speeds for PM Future Scenario

3.4. Onroad Vehicle Age Distribution

Different age vehicles exhibit different emission rates, because different emissions control technologies have been adopted over time and newer vehicles have not suffered from performance deterioration over time. Therefore, the number of vehicles registered for each model year, which is known as the registration distribution for MOBILE modeling, helps determine the overall composite emission rate for the entire vehicle fleet. However, the fleet composite emission rate also depends how much each model year vehicle is driven. Newer vehicles are driven many more miles per year than older vehicles (comfort and reliability). Inside the emission rate models, the registration distribution is combined with mileage accumulation rate for each model year (within each vehicle class) to determine the expected age distribution of vehicles likely to be observed driving on the roadway, which is known as onroad vehicle age distribution.

The MOBILE modeling typically uses registration distribution and mileage accumulation as inputs, but these two can be replaced by an onroad vehicle age distribution if the distribution is known. This study uses the onroad vehicle age distribution since it is available for the I-85 corridor from the summer field study data for light duty vehicles and light duty trucks. For the remaining vehicle classes (heavy-duty trucks and buses), age distributions from the Atlanta Regional Commission and Georgia EPD are used. These data are based upon registration data from R.L. Polk and Co. for the 13-county area (except for HDV8B, which uses national defaults), and national mileage accumulation defaults from the EPA.

3.4.1. Onroad Vehicle Age Distribution for Base Scenario

An onroad vehicle age distribution can be developed by knowing the number of vehicles for each of the past 24 model years plus a 25th category for all older vehicles. These data were available to this analysis from the summer field study on I-85, which recorded license plates for passenger cars and light duty trucks by site, lane, time, and direction. These license plates were matched to the Georgia registration database, which provided vehicle identification numbers that were decoded to obtain make and model year information for over 110,000 vehicles. The make of these vehicles, such as four door sedan, were mapped to MOBILE vehicle types. Since the license plate data were collected only for small passenger vehicles almost all of the vehicles fell into the MOBILE vehicle types of light duty vehicle (LDV) or light duty truck 2 (LDT2). Definitions for all MOBILE vehicle types can be found in Appendix B.

3.4.1.1. Chi-Squared Testing

To determine how many onroad vehicle age distributions to create for different categories a number of chi-squared (χ^2) statistical tests were conducted. This type of test determines whether two distributions are statistically the same or different. First, age distributions were compared between general purpose and HOV lanes at different sites. This is done by calculating chi-squared as shown in Figure 3.95 and comparing the result to a critical value obtained from a one-tailed chi-square distribution table based upon the degrees of freedom and confidence level. For this analysis there are 24 degrees of freedom (df=24), which is calculated by subtracting one from the 25 model years. This analysis uses a standard 95% confidence level (ά=0.05). This yields a critical value of 36.42, which is compared to the calculated chi-squared values. If the calculated chi-squared value is greater than the critical value of 36.42 we reject the null hypothesis that the distributions are equal and we say that we are 95% sure that the distributions are statistically different from each other.

$$\chi^2 = \sum_{i=1}^{25} \frac{(HOV_i - GPE_i)^2}{GPE_i}$$

$$HOV_i = \text{Number of Vehicles of model year i observed in HOV Lane}$$

$$GP_i = \text{Number of Vehicles of model year i observed in GP Lanes}$$

$$GPE_i = \text{Expected \# of Vehicles in HOV Lane of model year i based on GP Lane Dist}$$

$$= \text{\% of Vehicles of model year i for GP Lane} * \text{Sum of \# of HOV Vehicles for 25 MY}$$

$$= \left(\frac{GP_i}{\sum_{i=1}^{25} GP_i} \right) * \sum_{i=1}^{25} HOV_i$$

Figure 3.9 Chi-Squared Calculation

The calculated chi-square values are found in Table 3.7, and from this it can be seen that the general purpose and HOV lane age distributions are different for every site except LDT2 vehicles at Northcrest Rd. and Chamblee Tucker Rd. since the calculated chi-square value at these locations are less than 36.42. These different vehicle ages for the GP and HOV lane are likely due to different demographic characteristics of drivers that use each type of lane. The fact that the GP and HOV lane age distributions are different in almost all cases emphasizes the need to use age distributions separated by lane type instead of aggregating the numbers together.

Table 3.7 Chi-Squared for HOV and GP Lane Comparison

Observation Site	LDT2	LDV
Beaver Ruin	43.46527	47.58507
Northcrest	26.39753	46.37013
Chamblee Tucker	16.4642	77.35966
Fifth St.	60.1141	41.77693
Fair Dr.	79.55081	57.86804
All Sites	47.63293	74.87611

A similar chi-squared analysis was performed to see if it is appropriate to group age distribution by site for all times and directions. Instead of comparing the HOV and GP lane distributions, distributions for the level of detail that differentiate time and direction were compared to aggregated distributions for all times and directions for a particular site and lane type. Table 3.8 shows the calculated chi-squared values, which reveals that the aggregated and non-aggregated distributions are different in a number of cases highlighted in yellow, such as at Fifth St., Northcrest Rd., and Beaver Ruin Rd. It could be hypothesized that demographics of drivers traveling in the peak time and direction (morning inbound and evening outbound) are different from the demographics of drivers traveling in off-peak times and directions, causing this observed difference in fleet age distributions. Since the aggregated and non-aggregated distributions are different for only five of the forty cases tested, this could be interpreted to suggest that it not always important to use the non-aggregated values. However, since the non-aggregated age distributions are available, this analysis will be cautious and use these non-aggregated age distributions for all cases as inputs into the emissions model.

Table 3.8 Chi-Squared for Overall Aggregation Comparison

Section	Observation Site	Direction	Time	LDT2	LDV
1	Fair Dr	NB	AM	26.64	25.63
1	Fair Dr	NB	PM	30.05	20.50
1	Fair Dr	SB	AM	18.43	17.14
1	Fair Dr	SB	PM	26.75	22.40
2	Fifth St	NB	AM	41.11	42.39
2	Fifth St	NB	PM	14.63	22.53
2	Fifth St	SB	AM	21.73	22.41
2	Fifth St	SB	PM	25.43	28.85
3	Chamblee Tucker Rd	NB	AM	22.56	32.36
3	Chamblee Tucker Rd	NB	PM	12.65	14.48
3	Chamblee Tucker Rd	SB	AM	21.53	13.59
3	Chamblee Tucker Rd	SB	PM	32.38	21.27
4	Northcrest Rd	NB	AM	23.26	33.16
4	Northcrest Rd	NB	PM	34.30	37.11
4	Northcrest Rd	SB	AM	13.33	20.11
4	Northcrest Rd	SB	PM	21.15	41.25
5	Beaver Ruin Rd	NB	AM	41.62	19.16
5	Beaver Ruin Rd	NB	PM	19.04	26.16
5	Beaver Ruin Rd	SB	AM	28.20	21.73
5	Beaver Ruin Rd	SB	PM	33.42	22.57
Note: yellow shading indicates values above the critical value of 36.42					

3.4.1.2. Data Gaps and Gamma Distributions

Given the results of the chi-squared testing all vehicles from the license plate data were placed into each of the 40 categories that represent different combinations of lane type, time, direction, and roadway section as listed in Table 3.1. While most of these categories had enough vehicles in each model year to support the creation of an onroad vehicle age distribution a few steps had to be taken to provide expected data for older model year vehicles, which occasionally contained no observed vehicles.

A distribution function similar to vehicle age distributions was sought to provide missing percentage values for some of the older model years. A gamma distribution has similar characteristics to many vehicle age distributions due to its higher values towards one side of the distribution. Gamma distributions are based on two parameters a shape parameter (alpha) and a scale parameter (beta). Individual gamma distributions with different shape and scale parameters are created for each of the 40 categories. The shape and scale parameter are calculated for each category based on the median and mode for the vehicle data available in that category. The following equations are used to calculate the parameters:

$$\text{shape parameter}\,(\alpha) = \frac{1}{1 - \dfrac{\text{mode}}{\text{median}}}$$

$$\text{scale parameter}\,(\beta) = \frac{\alpha}{\text{median}}$$

A gamma distribution is created using these parameters for each category and when a value is missing from an age distribution the gamma distribution value is used for that model year. Figure 3.10 shows an example of how the gamma distribution values are used to fill gaps in the data for 1985 and 1987 model year vehicles.

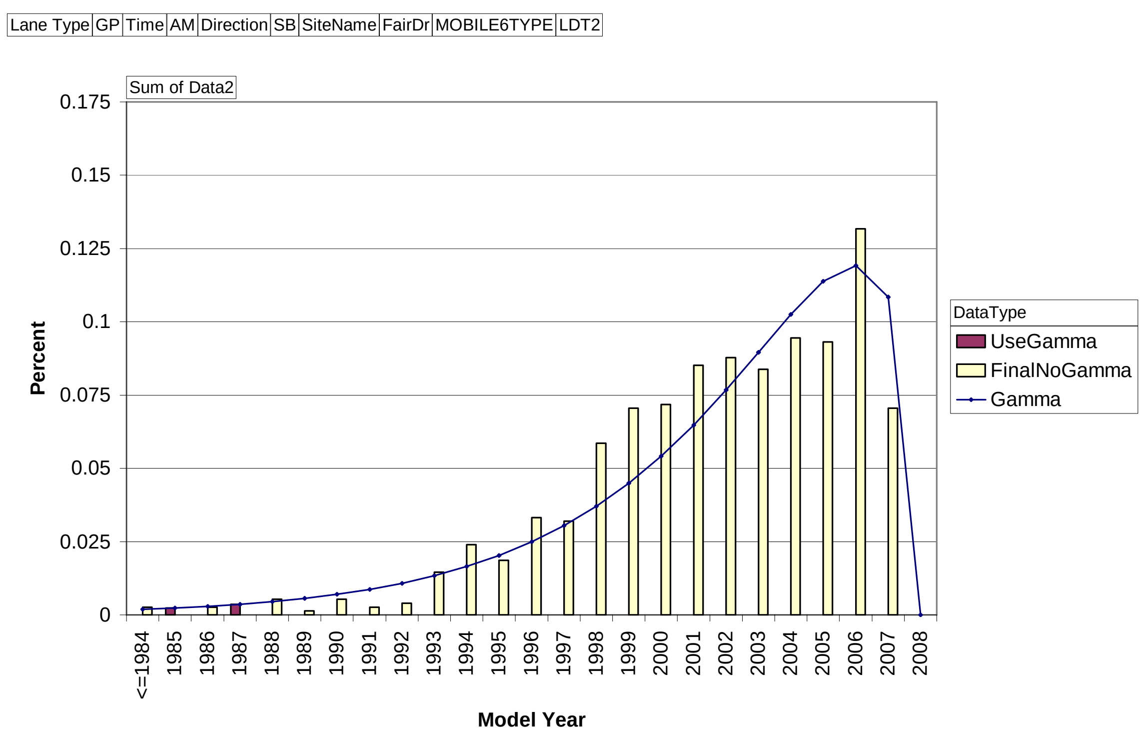

Figure 3.10 Example of Using Gamma Distribution

3.4.1.3. Data Gaps and Combining HOV Off-Peak Data

For several sites the HOV lane had small amounts of data in the off-peak time and direction due to low volumes in the HOV lanes during these time periods. It was determined that these categories did not have enough data to create a reliably shaped age distribution. It would also not be appropriate to create a gamma distribution to fill the gaps in this data because the overall shape and scale of the distribution would be based on insufficient data. Therefore, several HOV sites with the same off-peak periods were combined to provide a sufficient amount of data to produce a reliably shaped age distribution. For example, data from the Fair Dr. and Fifth St. observation sites (sections 1 and 2) were combined for the HOV lane AM southbound direction and for the HOV lane PM northbound direction. Similarly, data from the Chamblee Tucker Rd., Northcrest Rd., and Beaver Ruin Rd. sites (sections 3, 4, and 5) were combined for the HOV lane AM northbound direction and for the HOV lane PM southbound direction. To verify that it is reasonable to combine these data a chi-squared test similar to the ones discussed above was conducted to compare the non-aggregated and aggregated distributions. Table 3.9 shows that none of the calculated chi-squared values are above 36.42, and therefore each of the non-aggregated age distributions are statistically the same as its corresponding aggregated age distribution. Therefore, it is reasonable to substitute the aggregated distributions for the non-aggregated distributions in all the cases.

Table 3.9 Chi-Squared for HOV Off-Peak Aggregation Comparison

Southside Sites		HOV AM SB	HOV PM NB
LDV	Fair Dr.	13.65	11.95
	Fifth St.	3.59	7.06
LDT2	Fair Dr.	17.39	17.36
	Fifth St.	3.91	9.95
Northside Sites		**HOV AM NB**	**HOV PM SB**
LDV	Chamblee Tucker Rd.	16.28	22.34
	Northcrest Rd.	13.98	18.65
	Beaver Ruin Rd.	17.47	25.15
LDT2	Chamblee Tucker Rd.	11.30	12.69
	Northcrest Rd.	20.17	16.99
	Beaver Ruin Rd.	15.36	10.05

In summary, onroad vehicle age distributions were created for the base scenario individually for each of the 80 combinations of vehicle type, lane type, time, direction, and site, using gamma distribution values to fill in data gaps for older model year vehicles. However, for 20 of the cases for HOV off-peak sites, data were combined with data from surrounding sites to create 8 distributions instead. All of the final onroad vehicle age distributions can be found in Appendix C.

3.4.2. Onroad Vehicle Age Distribution for Future Scenario

For the future scenario changes were applied to the onroad vehicle age distributions in the peak time and direction to reflect the change in vehicle fleet characteristics during pricing periods on the HOT lanes. It was hypothesized that HOT lanes will have more new vehicles than other types of lanes because the demographics of drivers using the HOT lane will be made up of higher income individuals that are more willing to pay the toll. Changes were applied to the same set of time, direction, and sites as shown for volumes in Table 3.4 and for speeds in Table 3.6, but only for the HOT lane. All general purpose lanes, in both the peak and non-peak direction, use the same onroad vehicle age distributions as the base scenario.

During the literature review, a case study of SR91 in southern California contained information that could be used provide information on the difference in vehicle fleet characteristics between the general purpose and HOT lanes [13]. In this study, Barth used license plate data to distribute the vehicle fleet on the general purpose and HOT lanes into technology categories used by their emissions model as shown in Table 3.10.

Table 3.10 SR 91 Vehicle Fleet Distribution (Source: Barth [13])

No	Comprehensive Modal Emissions Model Category	General Purpose	HOT
1	No Catalyst	12.4	0.53
2	2-way Catalyst	4.81	0.64
3	3-way Catalyst, Carbureted	3.74	2.53
4	3-way Catalyst, FI, >50K miles, low power/weight	9.17	9.66
5	3-way Catalyst, FI, >50K miles, high power/weight	12.22	16.63
6	3-way Catalyst, FI, <50K miles, low power/weight	0.98	1.18
7	3-way Catalyst, FI, <50K miles, high power/weight	1.53	2.6
8	Tier 1, >50K miles, low power/weight	1.54	2.29
9	Tier 1, >50K miles, high power/weight	2.99	6.41
10	Tier 1, <50K miles, low power/weight	3.25	4.36
11	Tier 1, <50K miles, high power/weight	7.01	14.51
12	Pre-1979 (<=8500 GVW)	7.01	0.66
13	1979 to 1983 (<=8500 GVW)	1.59	0.61
14	1984 to 1987 (<=8500 GVW)	1.84	1.69
15	1988 to 1993, <=3750 LVW	3.07	4.46
16	1988 to 1993, >3750 LVW	2.9	6.39
17	Tier 1 LDT2/3 (3751-5750 LVW or Alt. LVW)	0.79	1.5
18	Tier 1 LDT4 (6001-8500 GVW, >5750 Alt. LVW)	0.8	2.5
19	Runs lean	3.8	3.58
20	Runs rich	1.45	1.6
21	Misfire	7.9	6
22	Bad catalyst	5.52	4.39
23	Runs very rich	1.38	0.73
24	Tier 1, >100K miles	0.1	0.17
25	Gasoline-powered, LDT (> 8500 GVW)	2.14	4.24
40	Diesel-powered, LDT (> 8500 GVW)	0.04	0.17
Total		100	100

To apply these distributions to I-85 in Atlanta a mapping procedure was used to convert the vehicle technology categories into model years, which are required by the

MOBILE-Matrix emissions model used in this analysis. This mapping procedure, which is outlined by Barth in a separate paper [14] uses data that describes which vehicle technologies were used during the production of certain model year vehicles. For example, vehicles from model year 1974 and earlier do not have catalytic converters; therefore, the category for “no catalyst” can be applied to this group of model year vehicles. Table 3.11 shows the results of the mapping procedure in terms of age distributions for GP and HOT lanes for LDGV and LDGT vehicle types. While the mapping procedure produced a distribution for 1973-1997 model year vehicles, it was assumed that these distributions could be generalized to vehicle ages instead of model years. While this assumption ignores several real-world occurrences, such as changing vehicle lifetimes over time and vehicle sales patterns that are dependent on particular model years, it is believed that these items would only create small differences over the 13 years between the Barth study and the proposed I-85 HOT lane implementation. Therefore, these differences were ignored for the purposes of this anlayis.

Instead of using the actual distributions found for HOT lanes on SR91 it was determined that it would be better to use the relationships (i.e. differences) between the GP and HOT lane for various vehicle ages and apply these relationships to the GP lane age distributions observed on I-85 in Atlanta. Using this method would reflect the local vehicle age distributions in Atlanta and at the same time consider differences in the age of vehicles that drive in the HOT lane. Therefore, for each vehicle age a GP to HOT lane conversion factor was created by dividing the HOT lane distribution percentage by the GP lane distribution percentage. These conversion factors, which can be found in Table

3.11, can be simply multiplied by a GP lane age distribution to obtain a projected HOT lane age distribution.

Table 3.11 GP to HOT Lane Conversion Factors

Vehicle Age	LDGV			LDGT		
	GP Distribution	HOT Distribution	HOT/GP Factor	GP Distribution	HOT Distribution	HOT/GP Factor
24+	5.19%	0.23%	0.04	2.63%	0.28%	0.11
23	5.19%	0.23%	0.04	2.63%	0.28%	0.11
22	1.01%	0.14%	0.14	2.63%	0.28%	0.11
21	1.01%	0.14%	0.14	2.63%	0.28%	0.11
20	1.01%	0.14%	0.14	2.63%	0.28%	0.11
19	1.01%	0.14%	0.14	2.63%	0.28%	0.11
18	1.01%	0.14%	0.14	1.00%	0.43%	0.43
17	1.01%	0.14%	0.14	1.00%	0.43%	0.43
16	3.92%	3.11%	0.79	6.12%	4.96%	0.81
15	3.98%	3.24%	0.81	6.12%	4.96%	0.81
14	4.03%	3.36%	0.83	6.12%	4.96%	0.81
13	4.11%	3.52%	0.86	6.58%	5.86%	0.89
12	4.19%	3.68%	0.88	6.58%	5.86%	0.89
11	4.31%	3.94%	0.91	6.58%	5.86%	0.89
10	4.43%	4.74%	1.07	5.03%	4.95%	0.98
9	4.64%	5.19%	1.12	5.69%	7.34%	1.29
8	4.59%	5.10%	1.11	5.61%	7.27%	1.30
7	4.70%	5.37%	1.14	5.48%	7.14%	1.30
6	4.68%	5.86%	1.25	3.72%	5.71%	1.53
5	4.61%	5.80%	1.26	3.62%	5.62%	1.55
4	4.46%	5.69%	1.28	3.64%	5.63%	1.55
3	6.27%	10.78%	1.72	2.10%	4.35%	2.08
2	6.10%	11.42%	1.87	2.09%	4.34%	2.08
1	4.72%	8.92%	1.89	2.17%	5.38%	2.48
0	4.65%	8.78%	1.89	2.33%	7.00%	3.00

The magnitude of the GP to HOT lane conversion factors can be interpreted to describe how many times more vehicles can be expected in the HOT lane compared to the GP lane for a certain vehicle age. For example, a conversion factor of 1.0 means that there are an equal number of vehicles from that model year in the GP and HOT lanes, while a conversion factor of 2.0 means that there are twice as many vehicles from that model year in the HOT lane as compared to the GP lane. From Figure 3.11 it can be seen that nine-year old and newer vehicles have factors above the 1.0 solid dividing line, which corresponds to more vehicles in the HOT lane than the GP lane. The ten-year old and older vehicles have factor below the 1.0 solid dividing line, which corresponds to less vehicles in the HOT lane. This result is expected due to the demographics of HOT lane drivers, which is expected to be composed of higher income individuals that are more willing to pay the associated toll.

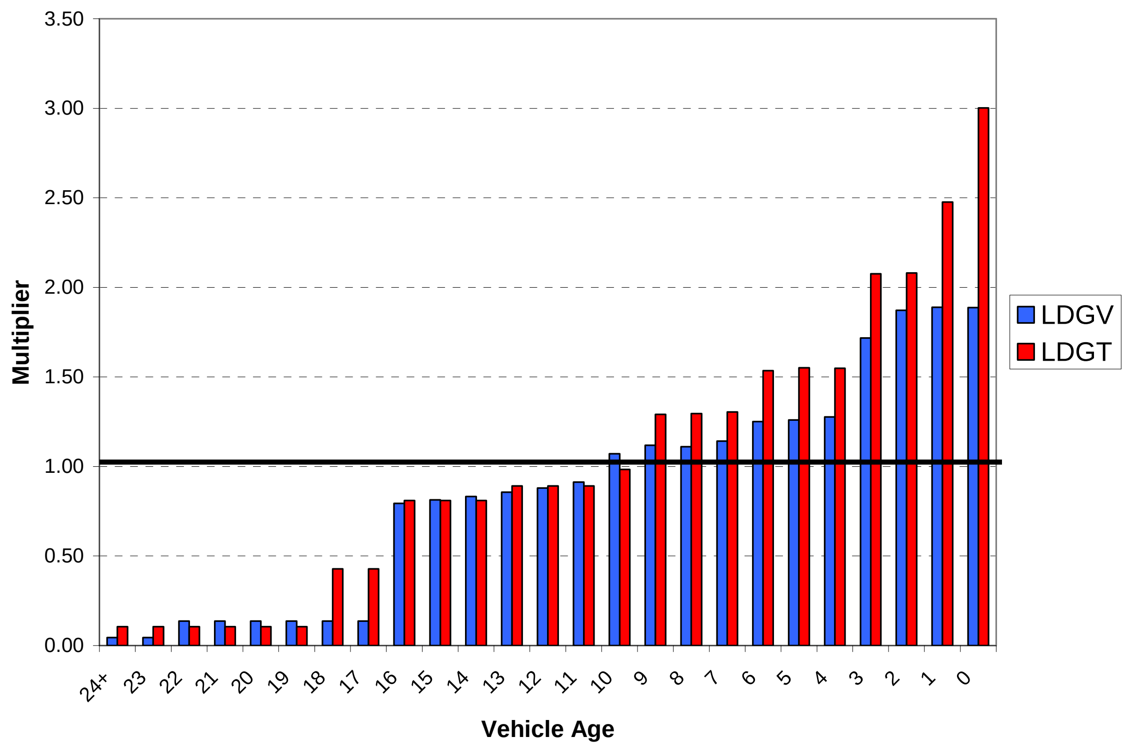

Figure 3.11 GP to HOT Lane Conversion Fractions

These conversion factors were applied to GP lane age distributions to estimate the HOT lane distributions for the peak time and direction. As was assumed for other inputs factors, Fifth St. was assumed to have pricing applied to HOT lanes in both directions during the morning and evening peak. Figure 3.12 shows an example of an HOT Lane onroad vehicle age distribution calculated by applying the conversion factors to the GP lane distribution. Graphs of all onroad vehicle age distributions can be found in Appendix C.

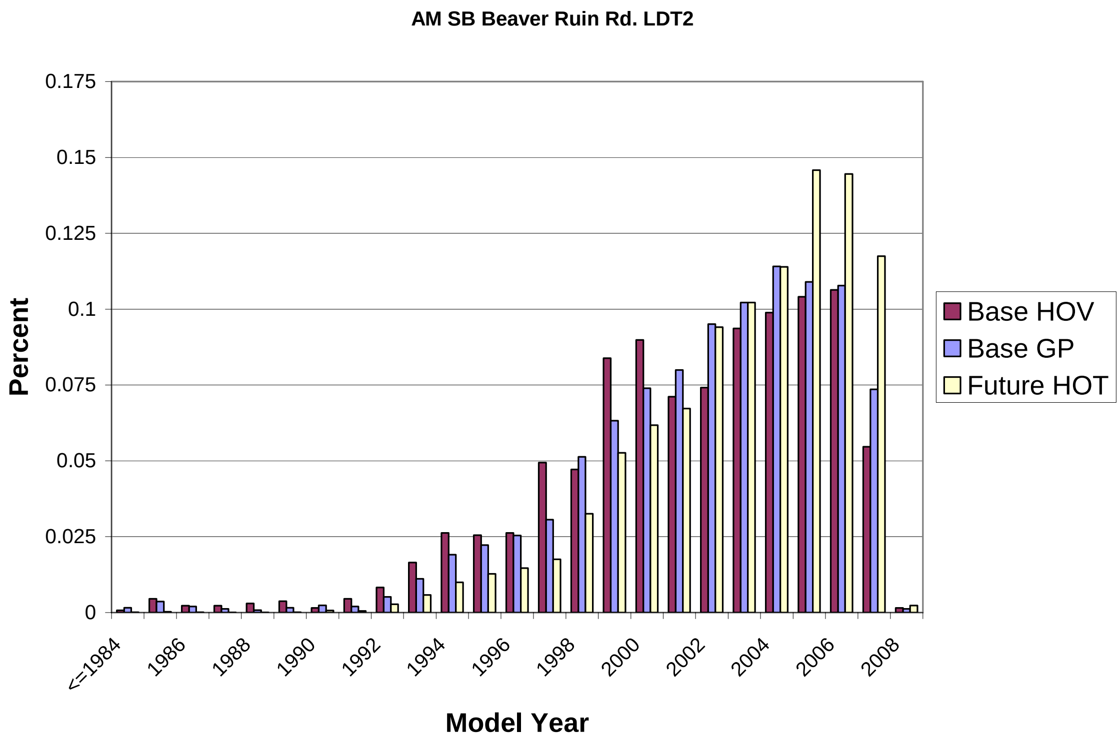

Figure 3.12 Example HOT Lane Age Distribution

3.5. Onroad Vehicle Class Distribution

Similar to the way different age vehicles have different emission rates, different vehicle classes (light-duty trucks, heavy-duty trucks, buses, etc.) have different emission rates also. Therefore, the MOBILE emissions model asks for the distribution among vehicle types to be able to calculate a composite emission rate for the entire vehicle fleet. The EPA provides national default data for the distribution among 28 MOBILE vehicle types, which is known as the VMT Fractions for MOBILE modeling due to the fact they are based on VMT for each vehicle type. These national defaults could be used for this study, but local data was available from the summer field study from the volume counts that broke vehicles into four vehicle types: passenger vehicles, small trucks, large trucks, and buses. These data can be found in can be found in Table 3.12. Due to the prohibition of large through trucks within the I-285 perimeter, the amount of large trucks varies depending on whether the site is within or outside of the perimeter. Therefore, it was determined to be worthwhile to create local VMT Fractions for the I-85 corridor based on these data.

Table 3.12 I-85 Summer Field Study Vehicle Type Distributions

Lane Type	Section	Site	Time	Direction	Passenger Vehicles	Small Trucks	Large Trucks	Buses
GP	1	Fair	AM	NB	95.49%	2.81%	1.65%	0.05%
GP	2	Fifth	AM	NB	96.22%	1.87%	1.85%	0.06%
GP	3	Chamblee	AM	NB	94.96%	2.24%	2.70%	0.09%
GP	4	Northcrest	AM	NB	89.98%	3.56%	6.38%	0.08%
GP	5	BeaverRuin	AM	NB	87.15%	4.89%	7.84%	0.12%
GP	1	Fair	AM	SB	92.03%	5.07%	2.68%	0.22%
GP	2	Fifth	AM	SB	96.36%	2.08%	1.49%	0.07%
GP	3	Chamblee	AM	SB	97.15%	1.82%	0.96%	0.06%
GP	4	Northcrest	AM	SB	96.08%	1.95%	1.92%	0.04%
GP	5	BeaverRuin	AM	SB	94.52%	1.90%	3.56%	0.02%
GP	1	Fair	PM	NB	96.56%	2.06%	1.15%	0.23%
GP	2	Fifth	PM	NB	97.36%	1.65%	0.92%	0.07%
GP	3	Chamblee	PM	NB	95.98%	3.01%	0.95%	0.06%
GP	4	Northcrest	PM	NB	94.07%	1.92%	3.80%	0.21%
GP	5	BeaverRuin	PM	NB	92.35%	1.90%	5.66%	0.09%
GP	1	Fair	PM	SB	94.06%	4.63%	1.17%	0.14%
GP	2	Fifth	PM	SB	96.23%	2.17%	1.38%	0.23%
GP	3	Chamblee	PM	SB	97.36%	1.51%	1.04%	0.09%
GP	4	Northcrest	PM	SB	95.94%	1.67%	2.33%	0.05%
GP	5	BeaverRuin	PM	SB	91.25%	2.04%	6.62%	0.09%
HOV	1	Fair	AM	NB	96.28%	2.47%	0.05%	1.20%
HOV	2	Fifth	AM	NB	97.31%	1.77%	0.05%	0.87%
HOV	3	Chamblee	AM	NB	86.35%	2.66%	0.00%	10.99%
HOV	4	Northcrest	AM	NB	86.35%	3.19%	0.18%	10.28%
HOV	5	BeaverRuin	AM	NB	92.47%	2.69%	0.00%	4.84%
HOV	1	Fair	AM	SB	87.22%	5.05%	0.00%	7.73%
HOV	2	Fifth	AM	SB	95.82%	2.28%	0.06%	1.84%
HOV	3	Chamblee	AM	SB	95.35%	1.51%	0.24%	2.89%
HOV	4	Northcrest	AM	SB	95.52%	2.87%	0.00%	1.61%
HOV	5	BeaverRuin	AM	SB	96.34%	2.33%	0.12%	1.21%
HOV	1	Fair	PM	NB	96.76%	2.00%	0.00%	1.23%
HOV	2	Fifth	PM	NB	97.66%	0.98%	0.00%	1.36%
HOV	3	Chamblee	PM	NB	96.54%	1.31%	0.03%	2.11%
HOV	4	Northcrest	PM	NB	95.49%	2.83%	0.10%	1.57%
HOV	5	BeaverRuin	PM	NB	96.98%	1.30%	0.03%	1.70%
HOV	1	Fair	PM	SB	95.80%	2.67%	0.08%	1.46%
HOV	2	Fifth	PM	SB	97.54%	1.21%	0.10%	1.16%
HOV	3	Chamblee	PM	SB	97.56%	0.59%	0.00%	1.85%
HOV	4	Northcrest	PM	SB	97.74%	0.89%	0.00%	1.38%
HOV	5	BeaverRuin	PM	SB	98.75%	0.28%	0.00%	0.97%

Because the summer field study data does provide enough detail to break the vehicles into 28 MOBILE vehicle types, a combination of the summer field study data and the national default VMT fractions are used to create local VMT fractions for each of the 40 combinations of lane type, section, time, and direction. To do this summer field study vehicle types are matched to MOBILE6 vehicle types. Data collectors for the summer field study were provided FHWA vehicle class definitions with illustrations and told to group the FHWA classes into the four categories of passenger vehicles, buses, small trucks, and large trucks using the pairings found in the first two columns of Table 3.13. A previous study by Yoon [15] with a mapping between FHWA classes and MOBILE6 vehicle types is used to assign the proper MOBILE6 types to each summer field category as shown in the last two columns of Table 3.13.

Table 3.13 Vehicle Type Mapping

FHWA Classes	Summer Field Study Category	MOBILE6 Vehicle Type
Class 1-Motorcycles	Passenger Vehicles	LDGV, LDGT1, LDGT2, LDGT3, LDGT4, HDGV2B, LDDV, LDDT12, LDDT34, HDDV2B, MC
Class 2-Passenger Cars		
Class 3-Other 2-Axle, 4-Tire, Single Unit Vehicles		
Class 4-Buses	Buses	HDGB, HDDBT, HDDBS
Class 5-Two-Axle, 6-Tire, Single Unit Trucks	Small Trucks	HDGV3, HDGV4, HDGV5, HDGV6, HDGV7, HDDV3, HDDV4, HDDV5, HDDV6, HDDV7
Class 6-Three-axle Single Unit Trucks	Large Trucks	HDGV8A, HDGV8B, HDDV8A, HDDV8B
Class 7-Four+ Axle Single Unit Trucks		
Class 8-Four or Less Axle Single Trailer Trucks		
Class 9-Five Axle Single Trailer Trucks		
Class 10-Six+ Axle Single Trailer Trucks		
Class 11-Five or Less Axle Multi-Trailer Trucks		
Class 12-Six Axle Multi-Trailer Trucks		
Class 13-Seven+Axle Multi-Trailer Trucks		

With knowledge of which MOBILE6 vehicle types are included in each of the summer field study categories, the distributions collected for the summer field study can be further distributed to all 28 MOBILE6 vehicle types. This is done by using the relative share of each of the MOBILE6 vehicle types for each summer field study category based on the national defaults. For example, the share of HDGB among all buses is calculated by dividing the HDGB national default VMT fraction by the sum of the national default fractions for HDGB, HDDBT, and HDDBS. This share percentage is multiplied by the summer field study percentage for buses to find the final VMT fraction for HDGB. The process is repeated for all 28 MOBILE6 vehicle types to a full set of

VMT fractions. An example of a full set of local VMT fractions compared to national defaults can be found in Figure 3.13. All 40 sets of VMT fractions can be found in Appendix D.

It should be noted that the same 40 sets of VMT fractions are used for both the base and future scenarios based on the assumption that the implementation of an HOT lane will not affect the vehicle class distribution. This is believed to be a fairly reasonable assumption as long as the HOT lane implementation also allows transit and school buses in the same manner as the current HOV lane does. It is possible that the demographics of HOT lane drivers and possible commercial uses could cause a different mix of LDV and LDT2 vehicles. However, due to the lack of available data on this effect and the belief that this effect would be fairly small, a possible change in the mix of LDV and LDT2 vehicles will be ignored for this analysis.

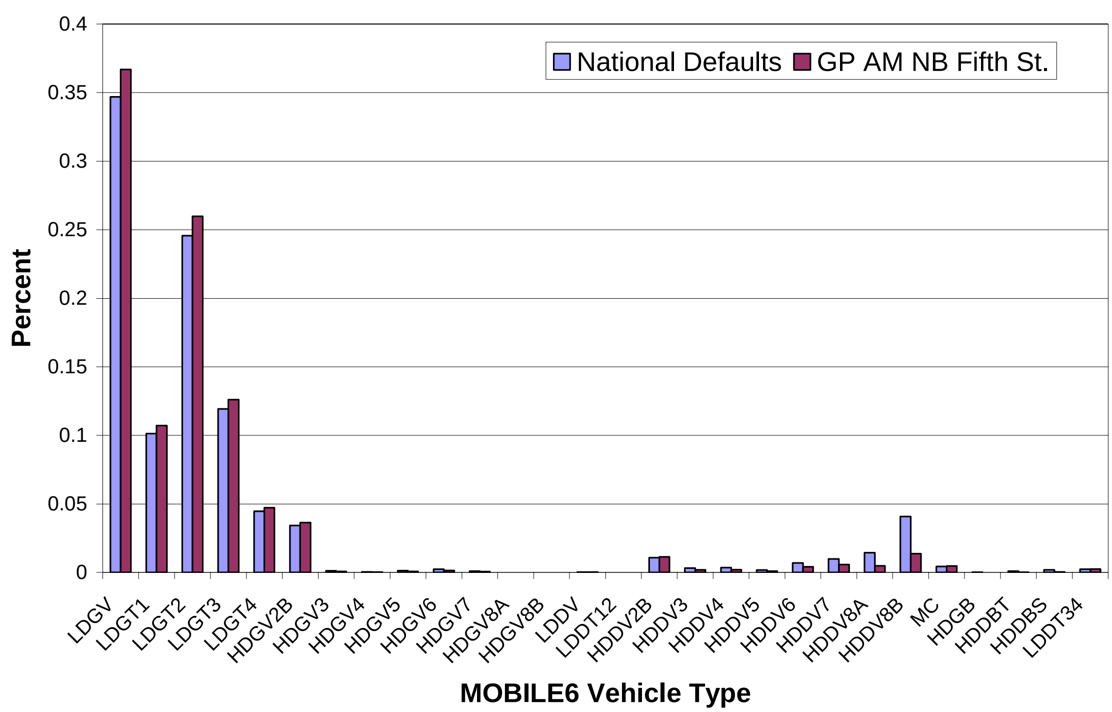

Figure 3.13 Example Vehicle Class Distribution

CHAPTER 4

EMISSIONS ANALYSIS AND RESULTS

4.1. Emissions Analysis Methodology

4.1.1. Overview of MOBILE-Matrix Tool

The MOBILE-Matrix tool is an emission modeling tool developed by Georgia Tech to provide emission rates and mass emissions calculations on a link-by-link basis by using a set of pre-run emission rate lookup matrices. Complete details on the tool can be found in the final report to the Georgia Department of Transportation [16]; however, an overview of the components relevant to this analysis is provided here.

One advantage of the MOBILE-Matrix tool over using EPA's MOBILE6 model alone are that thousands of MOBILE6.2 modeling runs have already been completed by varying calendar years, evaluation month (January or July), facility type, vehicle speeds, and ambient temperatures. The modeling runs use standard assumptions employed by the Atlanta Regional Commission that incorporate local conditions in the Atlanta 13-county area, such as humidity, inspection and maintenance programs, and regional fuel characteristics. The results of these modeling runs have been placed in large lookup tables and can be called up based on inputs provided by the user of the MOBILE-Matrix tool that correspond to the varying factors in the lookup tables, such as calendar year, evaluation month, etc. Therefore, speeds from hundreds of roadway links can be automatically matched with the appropriate 28x25 emission rates table, which represents 28 MOBILE vehicle types and 25 vehicle ages. Next, the 28x25 emission rate table is multiplied by the vehicle age distributions and vehicle class distributions provided by the user. This results in a single composite emission rate for each roadway link.

4.1.2. Verification Test for MOBILE-Matrix Tool

A verification test was conducted to examine the performance of the MOBILE-Matrix tool. The tool was run to calculate NOx emissions with inputs from the 2006 Early Progress State Implementation Plan [7] for the I-85 corridor. The outputs from the tool were compared with outputs from the 2006 SIP and they were within about 5% as shown in Table 4.1. It is believed that the difference is due to a number of variations between the modeling process for the MOBILE-Matrix tool and that performed for the 2006 SIP; therefore the difference is acceptable and the MOBILE-Matrix tool is assumed to be accurately predicting emission rates. The variations that likely account for the difference are:

- The earliest calendar year available for use with the tool is 2007. Therefore, this was used instead of 2006, which was used in the 2006 SIP. This may slightly affect the registration distributions by vehicle age.
- The 2006 SIP input a set of temperatures in MOBILE corresponding to the 24-hours of the day. The MOBILE-Matrix tool does not have the capability to accept such a set of temperatures, therefore 82 degrees was used, which is the midpoint between the minimum and maximum values in the set of temperatures used in the 2006 SIP.
- A VMT adjustment factor was used in the 2006 SIP; however, a lack of proper documentation made it difficult to exactly replicate the use of this

adjustment factor during post-processing of the emissions factors for the MOBILE-Matrix tool analysis.

Table 4.1 Accuracy Test Results

Output Source	NOx TPD
2006 SIP	16.48
MOBILE-Matrix Tool	15.59
% Difference	-5.38%

4.1.3. MOBILE-Matrix Run Setup

The MOBILE-Matrix tool currently only accepts a single table for onroad vehicle age distributions, VMT Fractions, and links. Therefore a batch process was created to iteratively run the MOBILE-Matrix 200 times for each combination of pollutant, lane type, time, direction, and roadway section, which are shown in Table 4.2 . Table 4.3 summarizes the variables that were altered for the future scenario and the ones that remained the same as the base scenario, which are described in detail in Chapter 3.

Table 4.2 Variables for MOBILE-Matrix Runs

Variable	Values
Pollutant	HC, NO_x, CO, $PM_{2.5}$, and PM_{10}
Lane Type	GP, HOV/HOT
Time	AM, PM
Direction	NB, SB
Section	1,2,3,4,5

Table 4.3 Variables Changed for Future Scenario

Lane Type	GP		HOT	
Peak/Off-Peak	Peak	Off-Peak	Peak	Off-Peak
Volumes	Changes Applied	Same as Base	Changes Applied	Same as Base
Speeds	Changes Applied	Same as Base	Changes Applied	Same as Base
Vehicle Age Distribution	Same as Base	Same as Base	Changes Applied	Same as Base
Vehicle Class Distribution (VMT Fractions)	Same as Base	Same as Base	Same as Base	Same as Base

4.1.3.1. Other Assumptions for MOBILE-Matrix Inputs

The MOBILE-Matrix tool requires a number of other inputs in addition to the major inputs that are impacted by HOT lanes, which are described in Chapter 3. These additional inputs are not changed between the base and future scenarios, they are simply provided to allow the model to run. Decisions for several of these inputs are based on the season of the worst case for each pollutant. For example, the worst case CO episodes usually occur during the winter; therefore, January is used as the evaluation month and temperatures are used from the winter. Worst case ozone and particulate matter episodes generally occur during the summer; therefore July is used as the evaluation month and temperatures from the summer are used for HC, NO_x, $PM_{2.5}$, and PM_{10}. The following list describes the exact input values used:

- Calendar Year: All runs and all scenarios are for calendar year 2010, which is the assumed year of HOT lane implementation.
- Evaluation Month: Runs for all pollutants are conducted for July, except for CO, which is conducted for January.
- Temperature: All AM runs use a temperature from a daily distribution for 8:00 AM, while all PM runs use a temperature from a daily distribution for 5:00 PM. The daily distribution for the pollutants with worst case scenarios in the summer (HC, NO_x, $PM_{2.5}$, and PM_{10}) are taken from 2006 SIP for 8-hour ozone nonattainment [7] and represent the average hourly temperatures from the 10 highest ozone days during 2000-2002. This is the standard method for ozone modeling provided in EPA guidance and used by other agencies, such as the ARC for their conformity determination on the regional transportation

plan (RTP). This yielded an AM temperature of 77 degrees Fahrenheit and a PM temperature of 91 degrees Fahrenheit. Because Atlanta is not a nonattainment area for CO, agencies have not compiled similar temperature data for the 10 highest CO days, which will likely occur during the winter months. Therefore, the lowest temperature day for 2007 was identified as January 29, 2007 from the National Weather Service's data for Hartsfield JacksonAtlanta International Airport [17]. The hourly temperature distribution for this day was obtained from Georgia Environmental Protection Division's Ambient Monitoring Program online database [18]. This yielded an AM temperature of 18 degrees Fahrenheit and a PM temperature of 40 degrees Fahrenheit.

- Peak Volume Factor: Separate peak volume factors were provided for AM and PM scenarios. These are taken from the ARC's RTP, which reports a diurnal distribution of travel in the 13-County Non-attainment area for the year 2000 [19]. The high value for the AM peak occurred in the 8:00 AM hour, and was 6.41%. The high value for the PM peak period occurred in the 6:00 PM hour, and was 7.73%.

4.2. Comparison of Base and Future Scenario Results

The final results showed very small changes in the mass emissions between the base and future scenarios. For all pollutants except HC, very small increases are predicted for the future scenarios. For HC , a small decrease was predicted for the future scenarios. These results can be observed in Table 4.4, which provides the results in tons per hour, and Table 4.5, which provides the same results in grams per hour. The same results can be found in graphical format in units of tons per hour in Figure 4.1, Figure 4.2, Figure 4.3, Figure 4.4, and Figure 4.5 for HC, CO, NO_x, $PM_{2.5}$, and PM_{10} respectively. The link by link mass emissions outputs can be found in Appendix E When separating out the peak time and direction, as shown on the right side of Table 4.4 and Table 4.5, the same trends between base and future scenarios can be observed. However, the magnitude of the increase or decrease is slightly higher due to the fact that all changes in the future scenario were applied during the peak time and direction.

Table 4.4 Mass Emissions in Tons Per Hour

Pollutant	Time	All Times & Directions			Peak Time & Direction		
		base	future	% Diff	base	future	% Diff
HC	AM	0.0706	0.0698	-1.19%	0.0492	0.0484	-1.70%
	PM	0.0708	0.0706	-0.32%	0.0458	0.0456	-0.49%
CO	AM	1.5572	1.5609	0.24%	1.0418	1.0455	0.35%
	PM	2.7709	2.7859	0.54%	1.6722	1.6873	0.90%
NOX	AM	0.5284	0.5295	0.23%	0.3064	0.3076	0.39%
	PM	0.4683	0.4697	0.30%	0.2824	0.2838	0.50%
$PM_{2.5}$	AM	0.01086	0.01095	0.84%	0.00692	0.00701	1.32%
	PM	0.01003	0.01009	0.65%	0.00645	0.00651	1.01%
PM_{10}	AM	0.01940	0.01954	0.73%	0.01280	0.01294	1.10%
	PM	0.01816	0.01827	0.64%	0.01171	0.01183	0.99%

Table 4.5 Mass Emissions in Grams Per Hour

Pollutant	Time	All Times & Directions			Peak Time & Direction		
		base	future	% Diff	base	future	% Diff
HC	AM	64,059	63,299	-1.19%	44,675	43,915	-1.70%
	PM	64,243	64,040	-0.32%	41,572	41,370	-0.49%
CO	AM	1,412,701	1,416,046	0.24%	945,099	948,444	0.35%
	PM	2,513,693	2,527,334	0.54%	1,517,035	1,530,677	0.90%
NOX	AM	479,312	480,398	0.23%	277,984	279,071	0.39%
	PM	424,874	426,149	0.30%	256,196	257,471	0.50%
$PM_{2.5}$	AM	9,848	9,930	0.84%	6,277	6,359	1.32%
	PM	9,099	9,158	0.65%	5,850	5,908	1.01%
PM_{10}	AM	17,598	17,726	0.73%	11,615	11,742	1.10%
	PM	16,470	16,576	0.64%	10,627	10,732	0.99%

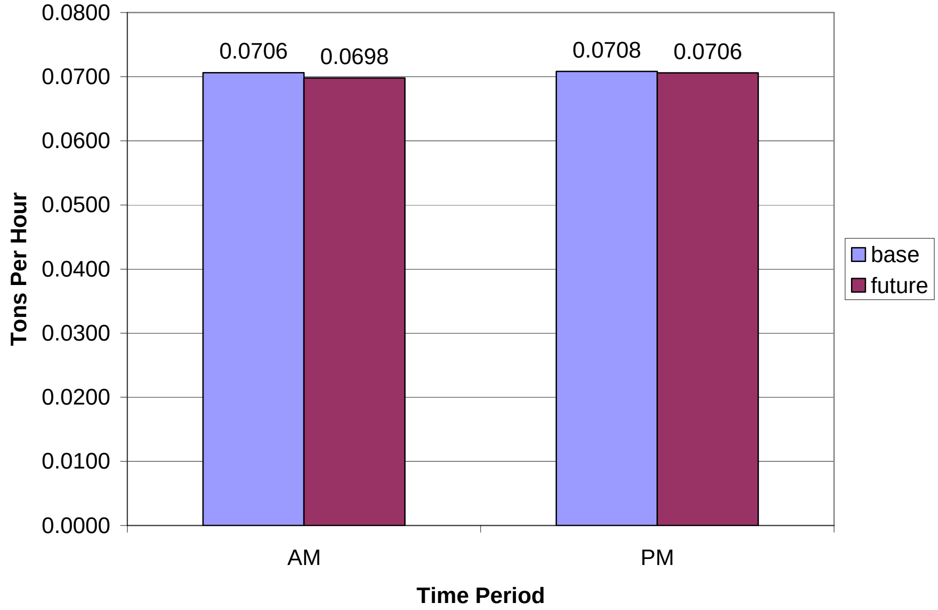

Figure 4.1 HC Mass Emissions Comparison for the I-85 Corridor

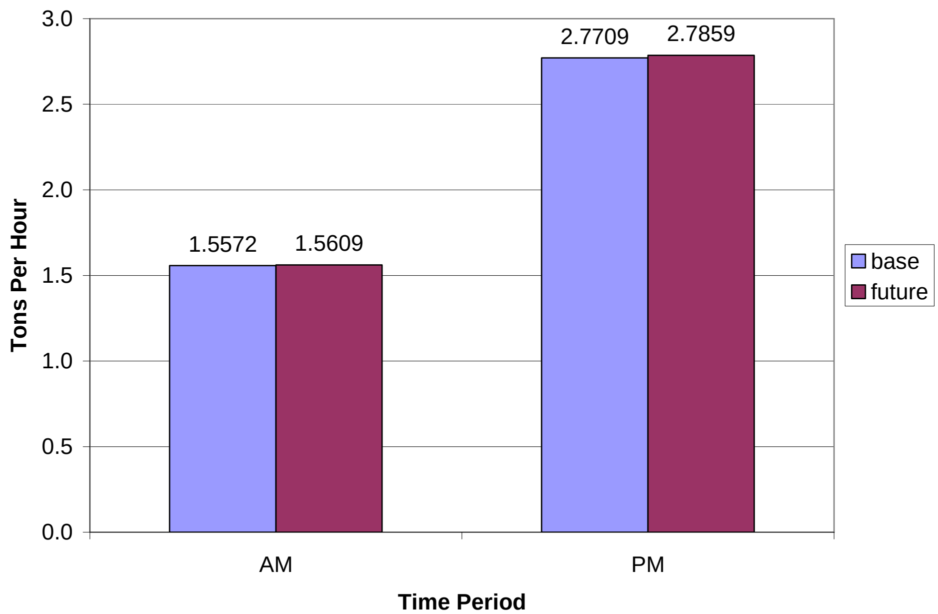

Figure 4.2 CO Mass Emissions Comparison for the I-85 Corridor

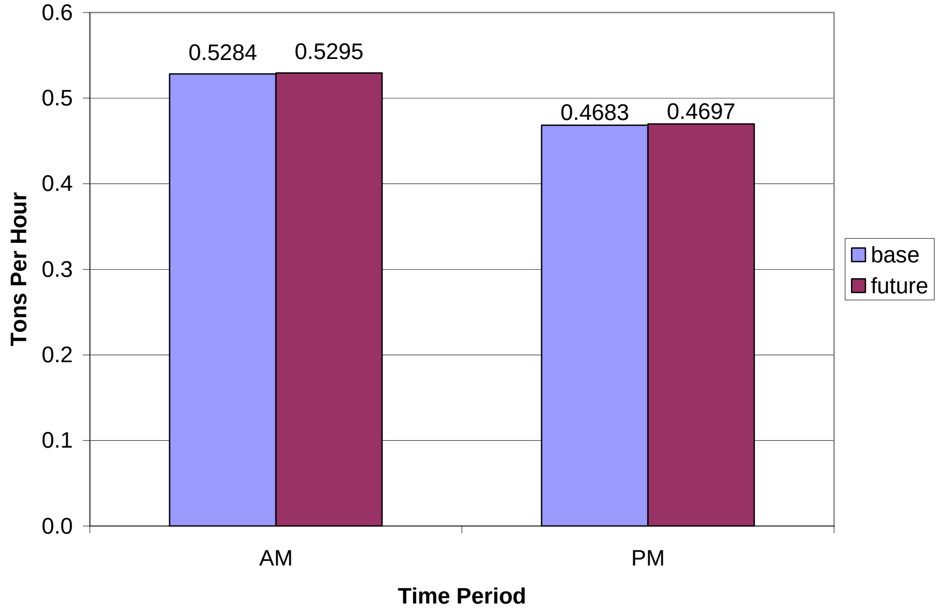

Figure 4.3 NO_x Mass Emissions Comparison for the I-85 Corridor

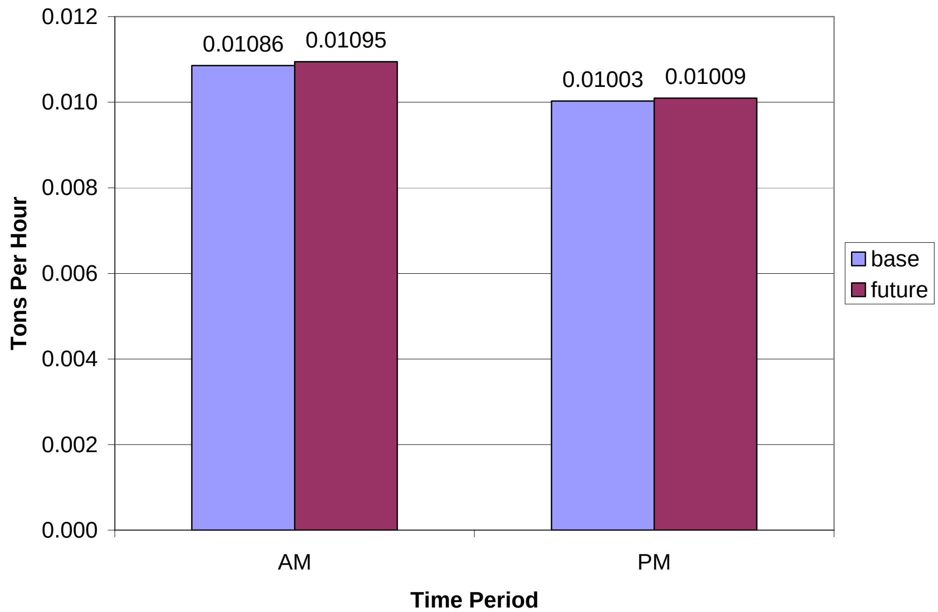

Figure 4.4 $PM_{2.5}$ Mass Emissions Comparison for the I-85 Corridor

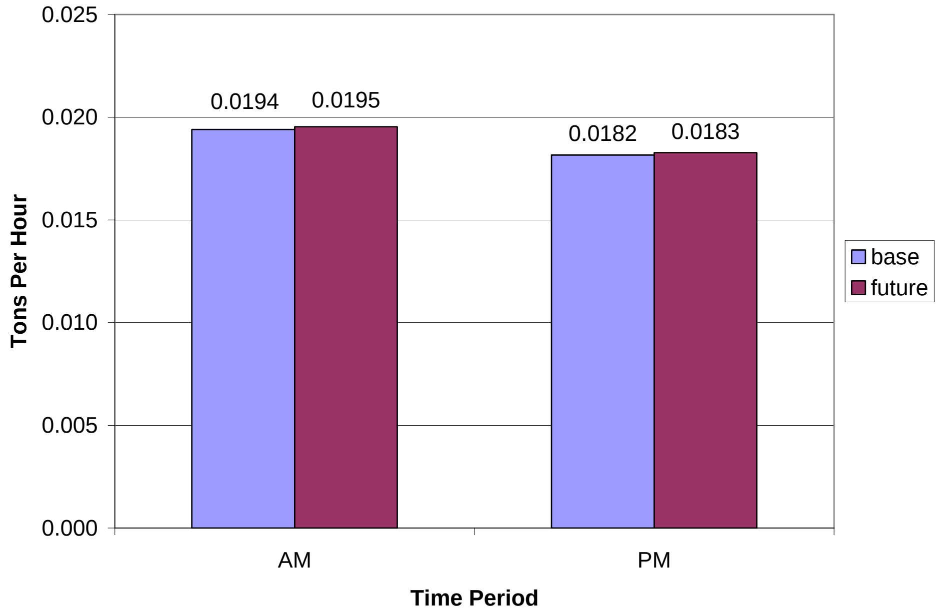

Figure 4.5 PM_{10} Mass Emissions Comparison for the I-85 Corridor

To further investigate the reasons for the trends in predicted results, the mass emissions are broken down into the VMT and emission rates used to calculate them. Table 4.6 shows the hourly VMT for the base and future scenarios during the AM and PM, while Figure 4.6 shows the same information graphically. It can be seen that the changes applied to volume in the future scenario created a small increase in VMT during both the AM and PM. To understand the contributions of changes to speed and vehicle age distributions an average emission rate for all links weighted by VMT for each link is calculated by dividing the total mass emissions by total VMT. The results of this calculation, which can be found in Table 4.7, show that for HC, CO, and NO_x speeds and vehicle age distributions applied to the future scenario cause a decrease in the emission rate with the largest decrease occurring for HC. For $PM_{2.5}$ and PM_{10} the results are mixed, with increases in the morning and decreases in the afternoon; however, the amount of the increases and decreases are so small that the emission rate could be considered unchanged during the future scenario.

The weighted average emission rates can also be used to help explain the large difference between AM and PM mass emissions for CO observed in Figure 4.2. The corresponding emission rate difference for CO between AM and PM observed in Table 4.7 suggests that the emission rate is highly sensitive to the assumed temperature for AM and PM. Since CO is the only pollutant run during the January evaluation month with these temperatures, which is due to its worst case behavior during winter months, this explains why CO is the only pollutant to exhibit these differences in the mass emissions between AM and PM.

Table 4.6 Hourly Vehicle Miles Traveled (VMT)

Time	All Times & Directions			Peak Time & Direction		
	base	future	% Diff	base	future	% Diff
AM	524,475	527,673	0.61%	370,520	373,718	0.86%
PM	503,415	507,098	0.73%	328,145	331,828	1.12%

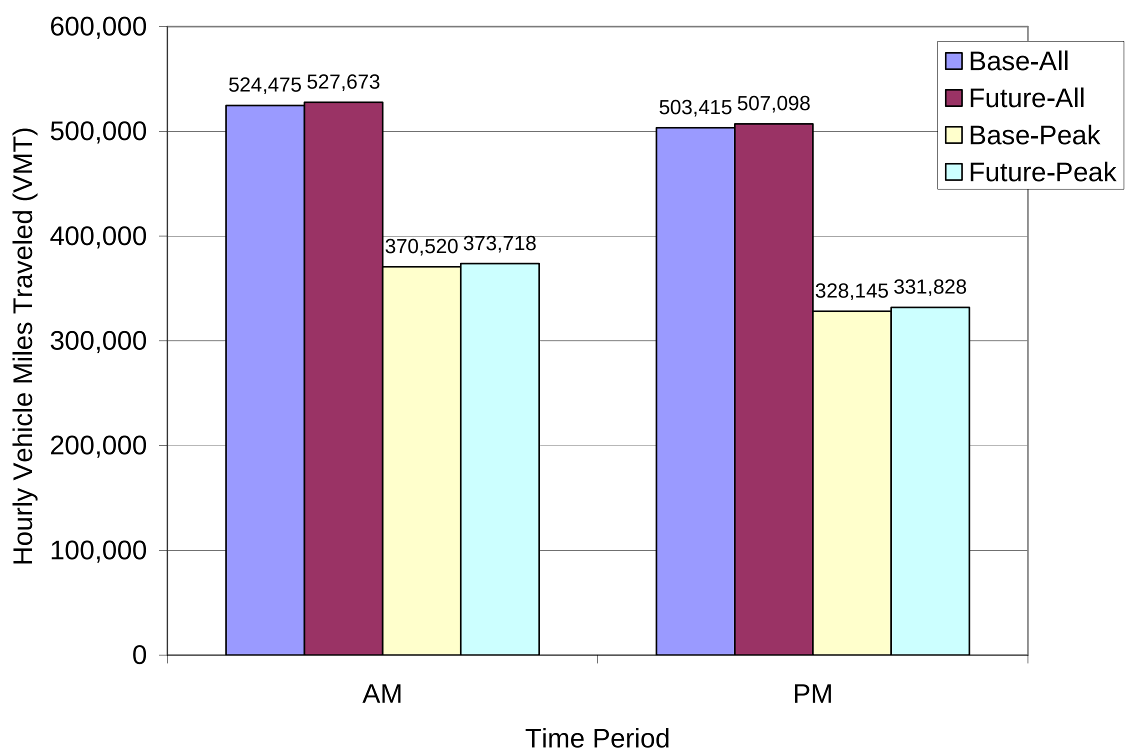

Figure 4.6 Hourly Vehicle Miles Traveled (VMT)

Table 4.7 Average Emission Rates Weighted by VMT (Grams/Vehicle-Mile)

Pollutant	Time	All Times & Directions			Peak Time & Direction		
		base	future	% Diff	base	future	% Diff
HC	AM	0.122	0.120	-1.78%	0.121	0.118	-2.54%
	PM	0.128	0.126	-1.04%	0.127	0.125	-1.59%
CO	AM	2.694	2.684	-0.37%	2.551	2.538	-0.50%
	PM	4.993	4.984	-0.19%	4.623	4.613	-0.22%
NOX	AM	0.914	0.910	-0.38%	0.750	0.747	-0.47%
	PM	0.844	0.840	-0.43%	0.781	0.776	-0.62%
$PM_{2.5}$	AM	0.01878	0.01882	0.23%	0.01694	0.01702	0.45%
	PM	0.01807	0.01806	-0.08%	0.01783	0.01781	-0.12%
PM_{10}	AM	0.03355	0.03359	0.12%	0.03135	0.03142	0.24%
	PM	0.03272	0.03269	-0.09%	0.03238	0.03234	-0.13%

When considering the VMT and emission rates that contribute to the mass emissions calculation, the underlying causes of the changes in mass emissions between the base and future scenario can be better understood. The following list summarizes these causes and the final results for each pollutant:

- HC has the largest decrease in emission rate between the base and future scenario. Even with an increase in VMT, the emission rate governs and causes an overall decrease in mass emissions.
- CO has a decrease in emission rate between the base and future scenario, but an increase in VMT causes an overall increase in mass emissions. Therefore the VMT increase dominates.
- NO_x has a decrease in emission rate between the base and future scenario, but an increase in VMT causes an overall increase in mass emissions. Therefore the VMT increase dominates.
- $PM_{2.5}$ has a basically unchanged emission rate between the base and future scenario. Therefore, the increase in VMT governs and causes an overall increase in mass emissions.

- PM_{10} has a basically unchanged emission rate between the base and future scenario. Therefore, the increase in VMT governs and causes an overall increase in mass emissions.

4.3. Comparison of Results with Regulatory Requirements

Mass emissions results are also compared to the I-85 portion of the motor vehicle emissions budget (MVEB), which were presented in Section 2.1.3, to determine if the implementation of HOT lanes on I-85 could cause the region to exceed its MVEB violating the transportation conformity rule. Since the Atlanta area is in nonattainment for the 8-hour ozone standard, MVEBs are available for Volatile Organic Compounds (VOC) and NOx. While the region is also in nonattainment for $PM_{2.5}$ an MVEB is not yet available since the State Implementation Plan (SIP) is still being completed. While VOC is similar to HC, since the exact differences between VOC in the MVEB and HC from the results of this analysis are unknown, the comparison will only be completed for $NO_{x.}$

Before comparing the MVEB and results from this analysis, it is necessary to ensure they are in comparable units. The MVEB are presented in grams per day, while this analysis presents the results in grams per hour for the AM and PM peak hour separately. Therefore, it is necessary to either prepare a daily inventory for this analysis or scale down the MVEBs to an hourly amount during the AM and PM separately. Since volume data for this study are not available for the midday and nighttime period, it is not possible to create a daily inventory. Therefore, the MVEBs are scaled down to grams per hour by using the diurnal distribution of travel by hour of the day used in the ARC's travel demand model [19], which was the source used to produce VMT for the MVEBs.

Since the MVEBs are available for I-85 for a four hour AM period from 6-10 AM and for a four hour PM period from 3-7 PM, the share of each four hour time period made up by the single peak hour needs to be determined. Analysis of the ARC's diurnal distributions yielded a share of 29.9% during the AM and a share of 27.4% during the PM. These figures make logical sense because they suggest that single peak hour make up slightly more than the 25% of the travel for a four hour period, which is the value that would be expected for an even distribution of travel among the four hours. These shares are applied to the MVEB NOx mass emissions for the four hour AM and PM period to obtain the grams/hour of NOx found in the MVEB line of Table 4.8.

Table 4.8 presents a comparison of the mass emissions for NOx calculated for the base and future scenario of this study and the NO_x MVEB for the same portion of I-85 used in this study. It can be seen that both the base and future scenario fall well below the MVEB during both the AM and PM. While the amount below the budgets seems very large at first, it is fairly consistent with the amounts below budget determined for Envision6, the transportation plan for the entire region, as shown in Table 2.3. To determine the main contributor to this observation, the mass emissions were broken into their VMT and emission rate components in the same manner used in Section 4.2. This breakdown reveals that the VMT for this study and the MVEBs are very similar, but the emission rates for this study are much lower than those for the MVEBs. Since the MVEBs are set based upon a 2006 emissions inventory and this study is completed for the 2010 calendar year, it is likely that the difference in emission rates is caused by a younger vehicle fleet associated with the 2010 calendar year used for this study.

Table 4.8 Comparison of Results to MVEB

Scenario	NO_X Grams/Hour		Hourly VMT		Weighted Avg. Emission Rate	
	AM	PM	AM	PM	AM	PM
Base	479,312	424,874	524,475	503,415	0.914	0.844
Future	480,398	426,149	527,673	507,098	0.910	0.840
MVEB (I-85 Portion)	987,431	1,136,822	554,162	641,473	1.782	1.772
Base as % of MVEB	48.54%	37.37%	94.64%	78.48%	51.29%	47.62%
Future as % of MVEB	48.65%	37.49%	95.22%	79.05%	51.09%	47.42%

In summary, this comparison shows that the implementation of HOT lanes on I-85 will not cause the region to exceed its MVEB due to the fact that the mass emissions results for I-85 fall well below the portion of the MVEBs allocated to the same portion of I-85 for both the base and future scenario. Therefore, the implementation of HOT lanes on I-85 is extremely unlikely to violate the transportation conformity rule.

CHAPTER 5

CONCLUSIONS

5.1. Summary

This study completed a mass emissions analysis on I-85 in Atlanta for a base scenario that represents the current condition and a future scenario that represents the implementation of HOT lanes. Input factors considered for the analysis include vehicle activity, vehicle speeds, vehicle age distributions, and vehicle class distributions. The base scenario mainly uses data from a data collection effort by Georgia Tech during the summer of 2007 on the I-85 corridor, while the future scenario makes alterations to these data using information from other cities that have already implemented HOT lanes. The MOBILE-Matrix tool, which was recently developed by Georgia Tech, was used to run the emissions analysis using the input factors from these data sources. The results show very small increases in mass emissions for NO_x, CO, $PM_{2.5}$, and PM_{10}, and very small decreases in mass emissions for HC

The process used to conduct this analysis yielded a number of lessons and conclusions:

- The use of locally collected corridor data, such as that completed during the summer field study on I-85 can be used to better represent corridor specific conditions, such as vehicle age distribution and vehicle class distribution. This is preferable to using regional or national default values that can often significantly differ from the local corridor values due to specific local conditions. For example, the vehicle class distributions (VMT fractions) for locations inside the I-285 perimeter in Atlanta have fewer heavy trucks and more light duty vehicles than the national defaults due to the ban on through truck traffic inside the perimeter.

- When attempting to model a proposed HOT lane that does not yet exist anywhere in Atlanta it is helpful to observe how conditions change in other cities after the implementation of an HOT lane. For example, this study made use of changes in vehicle speeds after the implementation of HOT lanes on I-394 in Minneapolis, MN and vehicle fleet characteristics associated with HOT lanes on SR91 in southern California.
- Changes in mass vehicle emissions are influenced both by changes in VMT, which is due to vehicle activity, and changes in the emission rate, which is due to changes in speed and vehicle fleet characteristics. For this study emission rates decreased or remained unchanged for the future scenario and VMT increased for the future scenario. For four of the five pollutants the increase in VMT governed and caused a slight increase in mass emissions, but for HC the decrease in emission rates governed and caused a slight decrease in mass emissions.

5.2. Limitations of the Research

This research makes use of a vehicle emissions modeling tool, MOBILE-Matrix, which is based on the EPA's MOBILE6 vehicle emissions model. As is the case with all models, this model has its own internal assumptions used in an attempt to replicate real-world conditions. It is well known that the MOBILE6 model does not do a good job of representing traffic flow patterns with changing accelerations, and in fact a new model called MOVES is under development to account for this. Even with their internal assumptions the MOBILE6 and MOBILE-Matrix model are believed to be adequate to evaluate the I-85 HOT lanes because the project does not require detailed traffic flow characteristics like acceleration to be taken into account.

In addition to the internal model assumptions, this study made a number of assumptions, which are discussed in Chapter 3. For example, this study assumes that the implementation of HOT lanes will not cause a change in vehicle class distribution, while in reality the availability of reliable travel times in the HOT lane may cause businesses with certain vehicle types that are willing to pay the toll to increase their travel. However, these changes will likely be small and do not need to be taken into account.

Another limitation to the study is that the MOBILE-Matrix tool does not accept a daily distribution of temperatures. Instead it can only accept a single temperature and multiple runs must be performed to obtain daily emissions. Therefore, the analysis was run using a corresponding morning temperature for the AM cases, and a evening temperature for the PM cases. This may have caused the difference in the AM and PM CO mass emissions results, but it is not believed to have affected the results for the remaining pollutants.

The impact of the limitations described above is diminished by the fact that the base and future scenario use the same model with the same limitations. Therefore, any impact would only affect the magnitude of the results and would not affect the comparison between the base and future scenarios. In addition, the calculation of the MVEBs for conformity purposes uses the MOBILE6 emissions model, and the MOBILE-Matrix emissions model was shown in Section 4.1.2 to produce similar results.

5.3. Policy Recommendations

A vehicle emissions analysis is important to understand the impacts of the proposed HOT lane implementation on environmental regulations. Specifically, implications for the transportation conformity rule and the NEPA process are discussed below.

It is important to determine if the proposed project is likely to cause a conformity violation for the Atlanta 8-hour ozone nonattainment area and the Atlanta $PM_{2.5}$ nonattainment area. Because the mass emissions calculated for the proposed I-85 HOT lanes fall so far below the MVEB for NO_x, the project is highly unlikely to cause a conformity violation for ozone. Furthermore, the very small percentage change in predicted emissions along the corridor is well within the error bounds of current emission rate models. Hence, the small impact cannot be statistically differentiated from a zero predicted increase in emissions. Since the same pattern is likely to be observed between the $PM_{2.5}$ mass emissions calculated and the $PM_{2.5}$ MVEBs once they are created, the project is also unlikely to cause a conformity violation for $PM_{2.5}$. Therefore, this study should be sufficient evidence to show that the implementation of HOT lanes on I-85 will not cause the region to exceed its MVEB and will therefore not cause a violation of the transportation conformity rule. Further detailed analysis is not required due to the extremely small changes in emissions shown here.

The National Environmental Policy Act (NEPA) requires a detailed environmental analysis for proposed federal projects with a potentially significant environmental impact. In terms of air quality, the implementation of HOT lanes on I-85 has no potential impact due to the extremely small changes in mass vehicle emissions shown in this study. Therefore, this study can be used to make the case that further detailed analyses are not needed.

APPENDIX A

LINK INPUT TABLES

Table A.1 Speed and Volume Inputs by Link

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
GP	NB	1	27692822	28	44	29.176	44	9042	6924	8768	6924
GP	NB	1	27702771	34	44	35.428	44	9042	6924	8768	6924
GP	NB	1	27712772	34	44	35.428	44	9042	6924	8768	6924
GP	NB	1	27722773	34	44	35.428	44	9042	6924	8768	6924
GP	NB	1	27732831	32	42	33.344	42	7535	5770	7261	5770
GP	NB	1	27742775	32	42	33.344	42	7535	5770	7261	5770
GP	NB	1	27752776	27	42	28.134	42	6028	4616	5754	4616
GP	NB	1	27762778	27	42	28.134	42	6028	4616	5754	4616
GP	NB	1	27782779	27	42	28.134	42	6028	4616	5754	4616
GP	NB	1	27792780	25	40	26.05	40	6028	4616	5754	4616
GP	NB	1	28222825	34	50	35.428	50	9042	6924	8768	6924
GP	NB	1	28252770	28	44	29.176	44	9042	6924	8768	6924
GP	NB	1	28312774	32	42	33.344	42	7535	5770	7261	5770
GP	NB	1	36403641	48	57	50.016	57	6028	4616	5754	4616
GP	NB	1	36413711	34	53	35.428	53	7535	5770	7261	5770
GP	NB	1	36422769	28	44	29.176	44	9042	6924	8768	6924
GP	NB	1	36933640	48	57	50.016	57	6028	4616	5754	4616
GP	NB	1	37113642	34	53	35.428	53	7535	5770	7261	5770
GP	NB	2	27802783	16	31	16.672	32.271	7696	7012	7569	6855
GP	NB	2	27838877	16	31	16.672	32.271	7696	7012	7569	6855
GP	NB	2	27852844	16	40	16.672	41.64	13468	12271	13341	12114
GP	NB	2	27862849	16	31	16.672	32.271	11544	10518	11417	10361
GP	NB	2	27872788	25	40	26.05	41.64	9620	8765	9493	8608
GP	NB	2	27882796	19	31	19.798	32.271	11544	10518	11417	10361
GP	NB	2	27962797	19	31	19.798	32.271	11544	10518	11417	10361
GP	NB	2	27972798	19	31	19.798	32.271	11544	10518	11417	10361
GP	NB	2	27982799	19	31	19.798	32.271	11544	10518	11417	10361
GP	NB	2	27992800	19	22	19.798	22.902	9620	8765	9493	8608
GP	NB	2	28002854	25	31	26.05	32.271	9620	8765	9493	8608
GP	NB	2	28012803	25	22	26.05	22.902	11544	10518	11417	10361
GP	NB	2	28032804	25	22	26.05	22.902	11544	10518	11417	10361
GP	NB	2	28042805	27	23	28.134	23.943	11544	10518	11417	10361
GP	NB	2	28052806	32	33	33.344	34.353	11544	10518	11417	10361
GP	NB	2	28062807	32	33	33.344	34.353	11544	10518	11417	10361
GP	NB	2	28072808	32	33	33.344	34.353	11544	10518	11417	10361

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
GP	NB	2	28083053	32	33	33.344	34.353	11544	10518	11417	10361
GP	NB	2	280912173	32	33	33.344	34.353	11544	10518	11417	10361
GP	NB	2	28392785	16	40	16.672	41.64	13468	12271	13341	12114
GP	NB	2	28432786	16	31	16.672	32.271	11544	10518	11417	10361
GP	NB	2	28442843	16	31	16.672	32.271	11544	10518	11417	10361
GP	NB	2	28498841	25	40	26.05	41.64	9620	8765	9493	8608
GP	NB	2	28542801	25	31	26.05	32.271	9620	8765	9493	8608
GP	NB	2	30532809	32	33	33.344	34.353	11544	10518	11417	10361
GP	NB	2	31613162	27	16	28.134	16.656	5772	5259	5645	5102
GP	NB	2	31623066	39	33	40.638	34.353	9620	8765	9493	8608
GP	NB	2	88412787	25	40	26.05	41.64	9620	8765	9493	8608
GP	NB	2	88772839	13	31	13.546	32.271	11544	10518	11417	10361
GP	NB	2	121733161	39	33	40.638	34.353	11544	10518	11417	10361
GP	NB	3	28752878	50	42	50	43.722	4755	7645	4755	7141
GP	NB	3	28783168	50	42	50	43.722	4755	7645	4755	7141
GP	NB	3	28863164	39	23	39	23.943	3804	6116	3804	5612
GP	NB	3	28873163	39	33	39	34.353	4755	7645	4755	7141
GP	NB	3	30662887	39	33	39	34.353	4755	7645	4755	7141
GP	NB	3	312414514	50	33	50	34.353	5706	9174	5706	8670
GP	NB	3	31632886	39	33	39	34.353	4755	7645	4755	7141
GP	NB	3	316415655	39	23	39	23.943	3804	6116	3804	5612
GP	NB	3	31672875	50	42	50	43.722	3804	6116	3804	5612
GP	NB	3	31683124	50	33	50	34.353	5706	9174	5706	8670
GP	NB	3	41094111	53	48	53	49.968	4755	7645	4755	7141
GP	NB	3	41115274	56	44	56	45.804	4755	7645	4755	7141
GP	NB	3	52415246	58	50	58	52.05	4755	7645	4755	7141
GP	NB	3	52465244	58	50	58	52.05	3804	6116	3804	5612
GP	NB	3	52735470	50	42	50	43.722	4755	7645	4755	7141
GP	NB	3	52745273	56	50	56	52.05	4755	7645	4755	7141
GP	NB	3	54705471	56	50	56	52.05	4755	7645	4755	7141
GP	NB	3	547117851	56	44	56	45.804	5706	9174	5706	8670
GP	NB	3	1451414515	53	48	53	49.968	4755	7645	4755	7141
GP	NB	3	1451514517	53	48	53	49.968	4755	7645	4755	7141
GP	NB	3	145174109	50	42	50	43.722	4755	7645	4755	7141
GP	NB	3	156553167	50	42	50	43.722	3804	6116	3804	5612
GP	NB	3	178515241	58	50	58	52.05	4755	7645	4755	7141
GP	NB	4	52385271	56	50	56	52.05	4900	5850	4900	5581
GP	NB	4	52445238	58	50	58	52.05	3920	4680	3920	4411
GP	NB	4	527117854	56	50	56	52.05	4900	5850	4900	5581
GP	NB	4	54695472	52	35	52	36.435	5880	7020	5880	6751
GP	NB	4	54725473	50	33	50	34.353	5880	7020	5880	6751
GP	NB	4	178545469	52	35	52	36.435	5880	7020	5880	6751

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
GP	NB	5	54735479	52	44	52	45.804	6835	7725	6835	7479
GP	NB	5	54745475	46	23	46	23.943	6835	7725	6835	7479
GP	NB	5	54755476	50	33	50	34.353	6835	7725	6835	7479
GP	NB	5	54768593	52	44	52	45.804	6835	7725	6835	7479
GP	NB	5	54795474	48	24	48	24.984	6835	7725	6835	7479
GP	NB	5	69596960	52	44	52	45.804	8202	9270	8202	9024
GP	NB	5	69606961	50	33	50	34.353	6835	7725	6835	7479
GP	NB	5	69619599	50	33	50	34.353	8202	9270	8202	9024
GP	NB	5	69626963	47	40	47	41.64	6835	7725	6835	7479
GP	NB	5	69636964	46	33	46	34.353	8202	9270	8202	9024
GP	NB	5	85936959	52	44	52	45.804	8202	9270	8202	9024
GP	NB	5	95996962	47	40	47	41.64	8202	9270	8202	9024
GP	SB	1	27823139	46	20	46	20.82	3480	6828	3480	6337
GP	SB	1	28242827	52	35	52	36.435	5220	10242	5220	9751
GP	SB	1	28273144	52	24	52	24.984	5220	10242	5220	9751
GP	SB	1	28282824	52	35	52	36.435	6090	11949	6090	11458
GP	SB	1	28303143	52	35	52	36.435	6090	11949	6090	11458
GP	SB	1	28363140	46	20	46	20.82	4350	8535	4350	8044
GP	SB	1	29372782	37	19	37	19.779	3480	6828	3480	6337
GP	SB	1	31392836	46	20	46	20.82	3480	6828	3480	6337
GP	SB	1	31403141	46	20	46	20.82	4350	8535	4350	8044
GP	SB	1	31413142	46	20	46	20.82	4350	8535	4350	8044
GP	SB	1	31422830	48	35	48	36.435	4350	8535	4350	8044
GP	SB	1	31432828	52	35	52	36.435	6090	11949	6090	11458
GP	SB	1	31443701	52	24	52	24.984	5220	10242	5220	9751
GP	SB	1	37013975	52	35	52	36.435	4350	8535	4350	8044
GP	SB	1	39753976	52	35	52	36.435	4350	8535	4350	8044
GP	SB	1	39763653	58	44	58	45.804	3480	6828	3480	6337
GP	SB	2	27812937	37	13	38.554	13.533	6500	5024	6214	4920
GP	SB	2	27892790	43	31	44.806	32.271	9750	7536	9464	7432
GP	SB	2	27902791	37	19	38.554	19.779	8125	6280	7839	6176
GP	SB	2	27922793	37	15	38.554	15.615	8125	6280	7839	6176
GP	SB	2	27932794	43	15	44.806	15.615	9750	7536	9464	7432
GP	SB	2	27942795	43	15	44.806	15.615	9750	7536	9464	7432
GP	SB	2	27953145	43	15	44.806	15.615	9750	7536	9464	7432
GP	SB	2	28402781	43	11	44.806	11.451	9750	7536	9464	7432
GP	SB	2	28413147	43	15	44.806	15.615	11375	8792	11089	8688
GP	SB	2	28523156	43	31	44.806	32.271	9750	7536	9464	7432
GP	SB	2	28533155	37	19	38.554	19.779	9750	7536	9464	7432
GP	SB	2	28553154	31	15	32.302	15.615	8125	6280	7839	6176
GP	SB	2	28572855	37	22	38.554	22.902	9750	7536	9464	7432
GP	SB	2	28718230	32	23	33.344	23.943	6500	5024	6214	4920

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
GP	SB	2	28722873	32	33	33.344	34.353	9750	7536	9464	7432
GP	SB	2	28733051	32	33	33.344	34.353	9750	7536	9464	7432
GP	SB	2	30493050	32	33	33.344	34.353	9750	7536	9464	7432
GP	SB	2	30503151	39	23	40.638	23.943	11375	8792	11089	8688
GP	SB	2	30513052	32	33	33.344	34.353	9750	7536	9464	7432
GP	SB	2	30523150	32	33	33.344	34.353	9750	7536	9464	7432
GP	SB	2	31453146	43	15	44.806	15.615	9750	7536	9464	7432
GP	SB	2	31462841	43	15	44.806	15.615	11375	8792	11089	8688
GP	SB	2	31472840	43	15	44.806	15.615	11375	8792	11089	8688
GP	SB	2	31503049	32	33	33.344	34.353	9750	7536	9464	7432
GP	SB	2	31513152	39	23	40.638	23.943	11375	8792	11089	8688
GP	SB	2	31522857	39	23	40.638	23.943	11375	8792	11089	8688
GP	SB	2	31542853	31	15	32.302	15.615	8125	6280	7839	6176
GP	SB	2	31552852	37	19	38.554	19.779	9750	7536	9464	7432
GP	SB	2	31562789	43	31	44.806	32.271	9750	7536	9464	7432
GP	SB	2	82302872	46	42	47.932	43.722	6500	5024	6214	4920
GP	SB	2	27912792	43	31	44.806	32.271	8125	6280	7839	6176
GP	SB	3	28602861	46	48	47.932	48	8830	5370	8345	5370
GP	SB	3	28612862	46	48	47.932	48	8830	5370	8345	5370
GP	SB	3	286217812	46	50	47.932	50	7064	4296	6579	4296
GP	SB	3	28638657	46	50	47.932	50	7064	4296	6579	4296
GP	SB	3	28672868	32	20	33.344	20	7064	4296	6579	4296
GP	SB	3	28682869	32	20	33.344	20	8830	5370	8345	5370
GP	SB	3	28692870	32	20	33.344	20	8830	5370	8345	5370
GP	SB	3	28702871	32	20	33.344	20	8830	5370	8345	5370
GP	SB	3	41084113	46	53	47.932	53	8830	5370	8345	5370
GP	SB	3	411314509	39	50	40.638	50	8830	5370	8345	5370
GP	SB	3	524217852	46	53	47.932	53	8830	5370	8345	5370
GP	SB	3	52475242	52	56	54.184	56	7064	4296	6579	4296
GP	SB	3	52665247	52	57	54.184	57	7064	4296	6579	4296
GP	SB	3	52675268	46	50	47.932	50	8830	5370	8345	5370
GP	SB	3	52685269	46	50	47.932	50	8830	5370	8345	5370
GP	SB	3	52695270	52	56	54.184	56	8830	5370	8345	5370
GP	SB	3	52704108	48	53	50.016	53	8830	5370	8345	5370
GP	SB	3	86572867	32	20	33.344	20	7064	4296	6579	4296
GP	SB	3	89982863	46	50	47.932	50	7064	4296	6579	4296
GP	SB	3	1450914512	39	50	40.638	50	8830	5370	8345	5370
GP	SB	3	1451014511	39	48	40.638	48	10596	6444	10111	6444
GP	SB	3	145112860	39	48	40.638	48	10596	6444	10111	6444
GP	SB	3	1451214510	46	50	47.932	50	8830	5370	8345	5370
GP	SB	3	178128998	46	50	47.932	50	7064	4296	6579	4296
GP	SB	3	178525267	48	56	50.016	56	10596	6444	10111	6444

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
GP	SB	4	52395266	52	56	54.184	56	5592	3636	5297	3636
GP	SB	4	52635264	34	50	35.428	50	8388	5454	8093	5454
GP	SB	4	52645265	34	50	35.428	50	8388	5454	8093	5454
GP	SB	4	52655239	48	53	50.016	53	6990	4545	6695	4545
GP	SB	4	54805263	32	42	33.344	42	8388	5454	8093	5454
GP	SB	5	54785480	34	50	35.428	50	9120	7020	9022	7020
GP	SB	5	54815567	41	53	42.722	53	10944	8424	10846	8424
GP	SB	5	55675568	32	48	33.344	48	10944	8424	10846	8424
GP	SB	5	55685478	34	50	35.428	50	10944	8424	10846	8424
GP	SB	5	69686987	27	48	28.134	48	10944	8424	10846	8424
GP	SB	5	69837280	32	48	33.344	48	9120	7020	9022	7020
GP	SB	5	69848592	41	53	42.722	53	10944	8424	10846	8424
GP	SB	5	69876989	37	48	38.554	48	9120	7020	9022	7020
GP	SB	5	69899598	31	45	32.302	45	9120	7020	9022	7020
GP	SB	5	72806984	41	50	42.722	50	10944	8424	10846	8424
GP	SB	5	85925481	34	50	35.428	50	9120	7020	9022	7020
GP	SB	5	95986983	32	48	33.344	48	10944	8424	10846	8424
HOV	NB	1	1558615587	56	57	40	57	1145	433	1500	433
HOV	NB	1	1558715588	56	57	40	57	1145	433	1500	433
HOV	NB	1	1558815590	48	53	40	53	1145	433	1500	433
HOV	NB	1	1559015591	41	50	40	50	1145	433	1500	433
HOV	NB	1	1559115592	34	50	40	50	1145	433	1500	433
HOV	NB	1	1559215593	34	50	40	50	1145	433	1500	433
HOV	NB	1	1559315594	41	53	40	53	1145	433	1500	433
HOV	NB	1	1559415595	34	50	40	50	1145	433	1500	433
HOV	NB	1	1559515596	34	53	40	53	1145	433	1500	433
HOV	NB	1	1559615597	34	53	40	53	1145	433	1500	433
HOV	NB	1	1559715598	34	53	40	53	1145	433	1500	433
HOV	NB	1	1559815599	32	42	40	42	1145	433	1500	433
HOV	NB	1	1559915600	32	42	40	42	1145	433	1500	433
HOV	NB	1	1560015601	32	42	40	42	1145	433	1500	433
HOV	NB	1	1560115602	32	42	40	42	1145	433	1500	433
HOV	NB	1	1560215603	46	48	40	48	1145	433	1500	433
HOV	NB	1	1560315604	46	48	40	48	1145	433	1500	433
HOV	NB	1	1560415605	43	45	40	45	1145	433	1500	433
HOV	NB	2	1560515606	37	40	40	40	1336	1297	1500	1500
HOV	NB	2	1560615607	37	40	40	40	1336	1297	1500	1500
HOV	NB	2	1560715609	25	31	40	40	1336	1297	1500	1500
HOV	NB	2	1560915610	31	31	40	40	1336	1297	1500	1500
HOV	NB	2	1561015611	31	31	40	40	1336	1297	1500	1500
HOV	NB	2	1561115612	19	31	40	40	1336	1297	1500	1500
HOV	NB	2	1561215613	19	31	40	40	1336	1297	1500	1500

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
HOV	NB	2	1561315614	19	31	40	40	1336	1297	1500	1500
HOV	NB	2	1561415615	25	40	40	40	1336	1297	1500	1500
HOV	NB	2	1561515616	25	22	40	40	1336	1297	1500	1500
HOV	NB	2	1561615617	31	40	40	40	1336	1297	1500	1500
HOV	NB	2	1561715618	25	31	40	40	1336	1297	1500	1500
HOV	NB	2	1561815619	25	31	40	40	1336	1297	1500	1500
HOV	NB	2	1561915620	25	31	40	40	1336	1297	1500	1500
HOV	NB	2	1562015621	25	31	40	40	1336	1297	1500	1500
HOV	NB	2	1562115622	31	31	40	40	1336	1297	1500	1500
HOV	NB	2	1562215623	31	31	40	40	1336	1297	1500	1500
HOV	NB	2	1562315624	31	31	40	40	1336	1297	1500	1500
HOV	NB	2	1562415627	31	19	40	40	1336	1297	1500	1500
HOV	NB	2	1562715628	31	19	40	40	1336	1297	1500	1500
HOV	NB	2	1562815629	32	20	40	40	1336	1297	1500	1500
HOV	NB	2	1562915630	39	33	40	40	1336	1297	1500	1500
HOV	NB	2	1563015631	39	33	40	40	1336	1297	1500	1500
HOV	NB	2	1563115632	39	33	40	40	1336	1297	1500	1500
HOV	NB	2	1563215633	39	33	40	40	1336	1297	1500	1500
HOV	NB	2	1563315634	39	33	40	40	1336	1297	1500	1500
HOV	NB	2	1563415635	39	33	40	40	1336	1297	1500	1500
HOV	NB	2	1563515726	50	48	40	40	1336	1297	1500	1500
HOV	NB	2	1572615727	39	33	40	40	1336	1297	1500	1500
HOV	NB	3	1349415732	57	56	57	40	161	847	161	1500
HOV	NB	3	1349615746	58	50	58	40	161	847	161	1500
HOV	NB	3	1572715728	39	33	39	40	161	847	161	1500
HOV	NB	3	1572815729	39	33	39	40	161	847	161	1500
HOV	NB	3	1572915730	39	33	39	40	161	847	161	1500
HOV	NB	3	1573015731	46	33	46	40	161	847	161	1500
HOV	NB	3	1573113494	46	33	46	40	161	847	161	1500
HOV	NB	3	1573215733	57	42	57	40	161	847	161	1500
HOV	NB	3	1573315734	58	50	58	40	161	847	161	1500
HOV	NB	3	1573415735	58	50	58	40	161	847	161	1500
HOV	NB	3	1573515736	50	33	50	40	161	847	161	1500
HOV	NB	3	1573615737	50	33	50	40	161	847	161	1500
HOV	NB	3	1573715738	53	48	53	40	161	847	161	1500
HOV	NB	3	1573815739	53	48	53	40	161	847	161	1500
HOV	NB	3	1573915740	53	33	53	40	161	847	161	1500
HOV	NB	3	1574015741	55	48	55	40	161	847	161	1500
HOV	NB	3	1574115742	56	44	56	40	161	847	161	1500
HOV	NB	3	1574215743	58	50	58	40	161	847	161	1500
HOV	NB	3	1574315744	55	42	55	40	161	847	161	1500
HOV	NB	3	1574415745	58	50	58	40	161	847	161	1500

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
HOV	NB	3	1574513496	56	44	56	40	161	847	161	1500
HOV	NB	3	1574616411	58	50	58	40	161	847	161	1500
HOV	NB	3	1641110669	60	50	60	40	161	847	161	1500
HOV	NB	4	1066910670	60	56	60	40	161	1152	161	1500
HOV	NB	4	1067010671	58	53	58	40	161	1152	161	1500
HOV	NB	4	1067110672	58	50	58	40	161	1152	161	1500
HOV	NB	4	1067210673	56	35	56	40	161	1152	161	1500
HOV	NB	4	1067310674	53	23	53	40	161	1152	161	1500
HOV	NB	5	1067410675	58	44	58	40	248	1181	248	1500
HOV	NB	5	1067510676	56	24	56	40	248	1181	248	1500
HOV	NB	5	1067610677	53	16	53	40	248	1181	248	1500
HOV	NB	5	1067710678	53	33	53	40	248	1181	248	1500
HOV	NB	5	1067810679	58	44	58	40	248	1181	248	1500
HOV	NB	5	1067910680	56	35	56	40	248	1181	248	1500
HOV	NB	5	1068010681	56	35	56	40	248	1181	248	1500
HOV	NB	5	1068110682	53	33	53	40	248	1181	248	1500
HOV	NB	5	1068210683	53	33	53	40	248	1181	248	1500
HOV	NB	5	1068310684	50	22	50	40	248	1181	248	1500
HOV	NB	5	1068410685	52	45	52	40	248	1181	248	1500
HOV	NB	5	1068510686	53	33	53	40	248	1181	248	1500
HOV	SB	1	1554815549	52	40	52	40	231	864	231	1500
HOV	SB	1	1554915550	55	42	55	40	231	864	231	1500
HOV	SB	1	1555015551	53	20	53	40	231	864	231	1500
HOV	SB	1	1555115552	50	16	50	40	231	864	231	1500
HOV	SB	1	1555215553	50	16	50	40	231	864	231	1500
HOV	SB	1	1555315554	50	16	50	40	231	864	231	1500
HOV	SB	1	1555415555	56	35	56	40	231	864	231	1500
HOV	SB	1	1555515556	56	35	56	40	231	864	231	1500
HOV	SB	1	1555615557	56	35	56	40	231	864	231	1500
HOV	SB	1	1555715558	56	35	56	40	231	864	231	1500
HOV	SB	1	1555815559	56	35	56	40	231	864	231	1500
HOV	SB	1	1555915560	56	24	56	40	231	864	231	1500
HOV	SB	1	1556015561	56	24	56	40	231	864	231	1500
HOV	SB	1	1556115562	58	35	58	40	231	864	231	1500
HOV	SB	1	1556215563	58	35	58	40	231	864	231	1500
HOV	SB	1	1556315564	60	50	60	40	231	864	231	1500
HOV	SB	2	1551715518	53	50	40	40	1130	1365	1500	1500
HOV	SB	2	1551815519	39	23	40	40	1130	1365	1500	1500
HOV	SB	2	1551915520	39	23	40	40	1130	1365	1500	1500
HOV	SB	2	1552015521	39	23	40	40	1130	1365	1500	1500
HOV	SB	2	1552115522	39	23	40	40	1130	1365	1500	1500
HOV	SB	2	1552215523	39	23	40	40	1130	1365	1500	1500

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
HOV	SB	2	1552315524	39	42	40	40	1130	1365	1500	1500
HOV	SB	2	1552415525	39	42	40	40	1130	1365	1500	1500
HOV	SB	2	1552515526	39	42	40	40	1130	1365	1500	1500
HOV	SB	2	1552615529	43	19	40	40	1130	1365	1500	1500
HOV	SB	2	1552915530	43	19	40	40	1130	1365	1500	1500
HOV	SB	2	1553015531	43	19	40	40	1130	1365	1500	1500
HOV	SB	2	1553115532	43	22	40	40	1130	1365	1500	1500
HOV	SB	2	1553215533	43	22	40	40	1130	1365	1500	1500
HOV	SB	2	1553315534	47	31	40	40	1130	1365	1500	1500
HOV	SB	2	1553415535	47	31	40	40	1130	1365	1500	1500
HOV	SB	2	1553515536	47	31	40	40	1130	1365	1500	1500
HOV	SB	2	1553615537	47	40	40	40	1130	1365	1500	1500
HOV	SB	2	1553715538	47	13	40	40	1130	1365	1500	1500
HOV	SB	2	1553815539	47	31	40	40	1130	1365	1500	1500
HOV	SB	2	1553915540	43	40	40	40	1130	1365	1500	1500
HOV	SB	2	1554015541	43	40	40	40	1130	1365	1500	1500
HOV	SB	2	1554115542	43	40	40	40	1130	1365	1500	1500
HOV	SB	2	1554215543	43	40	40	40	1130	1365	1500	1500
HOV	SB	2	1554315544	43	31	40	40	1130	1365	1500	1500
HOV	SB	2	1554415545	43	31	40	40	1130	1365	1500	1500
HOV	SB	2	1554515546	43	31	40	40	1130	1365	1500	1500
HOV	SB	2	1554615547	47	31	40	40	1130	1365	1500	1500
HOV	SB	2	1554715548	52	15	40	40	1130	1365	1500	1500
HOV	SB	2	1565915517	53	50	40	40	1130	1365	1500	1500
HOV	SB	2	1572415659	46	23	40	40	1130	1365	1500	1500
HOV	SB	3	1070610707	56	56	40	56	872	387	1500	387
HOV	SB	3	1070715701	56	57	40	57	872	387	1500	387
HOV	SB	3	1349515702	52	53	40	53	872	387	1500	387
HOV	SB	3	1570113495	52	56	40	56	872	387	1500	387
HOV	SB	3	1570215703	50	50	40	50	872	387	1500	387
HOV	SB	3	1570315704	50	48	40	48	872	387	1500	387
HOV	SB	3	1570415705	56	56	40	56	872	387	1500	387
HOV	SB	3	1570515706	52	53	40	53	872	387	1500	387
HOV	SB	3	1570615707	53	53	40	53	872	387	1500	387
HOV	SB	3	1570715709	50	50	40	50	872	387	1500	387
HOV	SB	3	1570915710	50	50	40	50	872	387	1500	387
HOV	SB	3	1571015711	50	50	40	50	872	387	1500	387
HOV	SB	3	1571115713	46	48	40	48	872	387	1500	387
HOV	SB	3	1571315714	46	48	40	48	872	387	1500	387
HOV	SB	3	1571415715	53	56	40	56	872	387	1500	387
HOV	SB	3	1571515716	53	56	40	56	872	387	1500	387
HOV	SB	3	1571615717	46	50	40	50	872	387	1500	387

LANETYPE	DIRECTION	SECTION	LinkID	Speed_Base_AM	Speed_Base_PM	Speed_Future_AM	Speed_Future_PM	Vol_Base_AM	Vol_Base_PM	Vol_Future_AM	Vol_Future_PM
HOV	SB	3	1571715718	46	50	40	50	872	387	1500	387
HOV	SB	3	1571815719	53	55	40	55	872	387	1500	387
HOV	SB	3	1571915720	46	42	40	42	872	387	1500	387
HOV	SB	3	1572015721	46	42	40	42	872	387	1500	387
HOV	SB	3	1572115722	39	23	40	23	872	387	1500	387
HOV	SB	3	1572215723	39	23	40	23	872	387	1500	387
HOV	SB	3	1572315724	39	23	40	23	872	387	1500	387
HOV	SB	4	1070110702	39	42	40	42	1118	321	1500	321
HOV	SB	4	1070210703	41	44	40	44	1118	321	1500	321
HOV	SB	4	1070310704	48	50	40	50	1118	321	1500	321
HOV	SB	4	1070410705	52	57	40	57	1118	321	1500	321
HOV	SB	4	1070510706	56	59	40	59	1118	321	1500	321
HOV	SB	5	1068910690	46	48	40	48	1373	502	1500	502
HOV	SB	5	1069010691	50	50	40	50	1373	502	1500	502
HOV	SB	5	1069110692	37	40	40	40	1373	502	1500	502
HOV	SB	5	1069210693	39	48	40	48	1373	502	1500	502
HOV	SB	5	1069310694	39	48	40	48	1373	502	1500	502
HOV	SB	5	1069410695	48	53	40	53	1373	502	1500	502
HOV	SB	5	1069510696	48	50	40	50	1373	502	1500	502
HOV	SB	5	1069610697	48	53	40	53	1373	502	1500	502
HOV	SB	5	1069710698	48	44	40	44	1373	502	1500	502
HOV	SB	5	1069810699	39	42	40	42	1373	502	1500	502
HOV	SB	5	1069910700	41	50	40	50	1373	502	1500	502
HOV	SB	5	1070010701	48	50	40	50	1373	502	1500	502

APPENDIX B

MOBILE6 VEHICLE TYPE DEFINITIONS

Number	Abbreviation	Description
1	LDGV	Light-Duty Gasoline Vehicles (Passenger Cars)
2	LDGT1	Light-Duty Gasoline Trucks 1 (0-6,000 lbs. GVWR, 0-3750 lbs. LVW)
3	LDGT2	Light-Duty Gasoline Trucks 2 (0-6,000 lbs. GVWR, 3751-5750 lbs. LVW)
4	LDGT3	Light-Duty Gasoline Trucks 3 (6,001-8,500 lbs. GVWR, 0-5750 lbs. ALVW)
5	LDGT4	Light-Duty Gasoline Trucks 4 (6,001-8,500 lbs. GVWR, 5751 lbs. and greater ALVW)
6	HDGV2B	Class 2b Heavy-Duty Gasoline Vehicles (8501-10,000 lbs. GVWR)
7	HDGV3	Class 3 Heavy-Duty Gasoline Vehicles (10,001-14,000 lbs. GVWR)
8	HDGV4	Class 4 Heavy-Duty Gasoline Vehicles (14,001-16,000 lbs. GVWR)
9	HDGV5	Class 5 Heavy-Duty Gasoline Vehicles (16,001-19,500 lbs. GVWR)
10	HDGV6	Class 6 Heavy-Duty Gasoline Vehicles (19,501-26,000 lbs. GVWR)
11	HDGV7	Class 7 Heavy-Duty Gasoline Vehicles (26,001-33,000 lbs. GVWR)
12	HDGV8A	Class 8a Heavy-Duty Gasoline Vehicles (33,001-60,000 lbs. GVWR)
13	HDGV8B	Class 8b Heavy-Duty Gasoline Vehicles (>60,000 lbs. GVWR)
14	LDDV	Light-Duty Diesel Vehicles (Passenger Cars)
15	LDDT12	Light-Duty Diesel Trucks 1 and 2 (0-6,000 lbs. GVWR)
16	HDDV2B	Class 2b Heavy-Duty Diesel Vehicles (8501-10,000 lbs. GVWR)
17	HDDV3	Class 3 Heavy-Duty Diesel Vehicles (10,001-14,000 lbs. GVWR)
18	HDDV4	Class 4 Heavy-Duty Diesel Vehicles (14,001-16,000 lbs. GVWR)
19	HDDV5	Class 5 Heavy-Duty Diesel Vehicles (16,001-19,500 lbs. GVWR)
20	HDDV6	Class 6 Heavy-Duty Diesel Vehicles (19,501-26,000 lbs. GVWR)
21	HDDV7	Class 7 Heavy-Duty Diesel Vehicles (26,001-33,000 lbs. GVWR)
22	HDDV8A	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)
23	HDDV8B	Class 8b Heavy-Duty Diesel Vehicles (>60,000 lbs. GVWR)
24	MC	Motorcycles (Gasoline)
25	HDGB	Gasoline Buses (School, Transit and Urban)
26	HDDBT	Diesel Transit and Urban Buses
27	HDDBS	Diesel School Buses
28	LDDT34	Light-Duty Diesel Trucks 3 and 4 (6,001-8,500 lbs. GVWR)

APPENDIX C

ONROAD VEHICLE AGE DISTRIBUTION GRAPHS

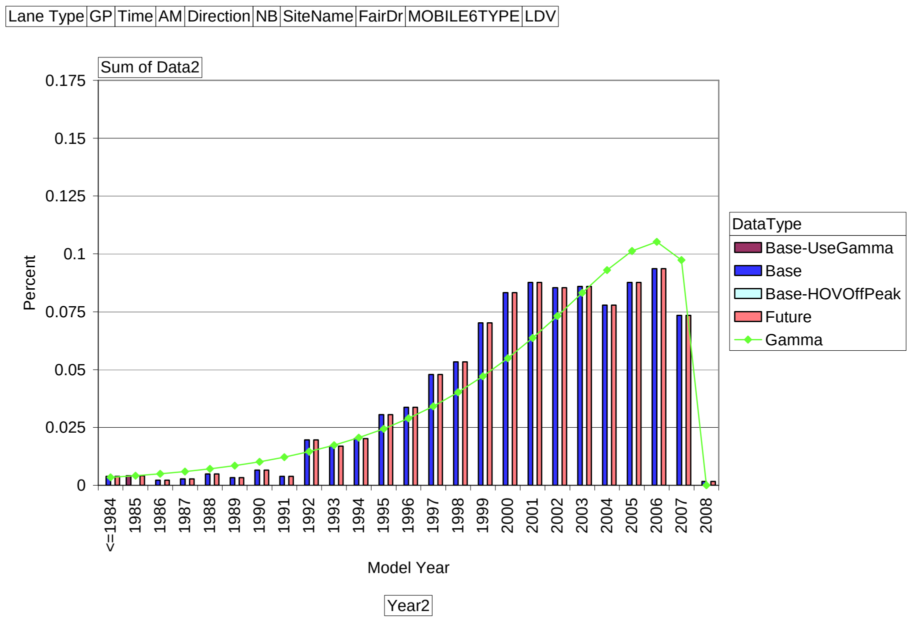

Figure C.1 Onroad Age Distribution for GP AM NB Fair Dr. LDV

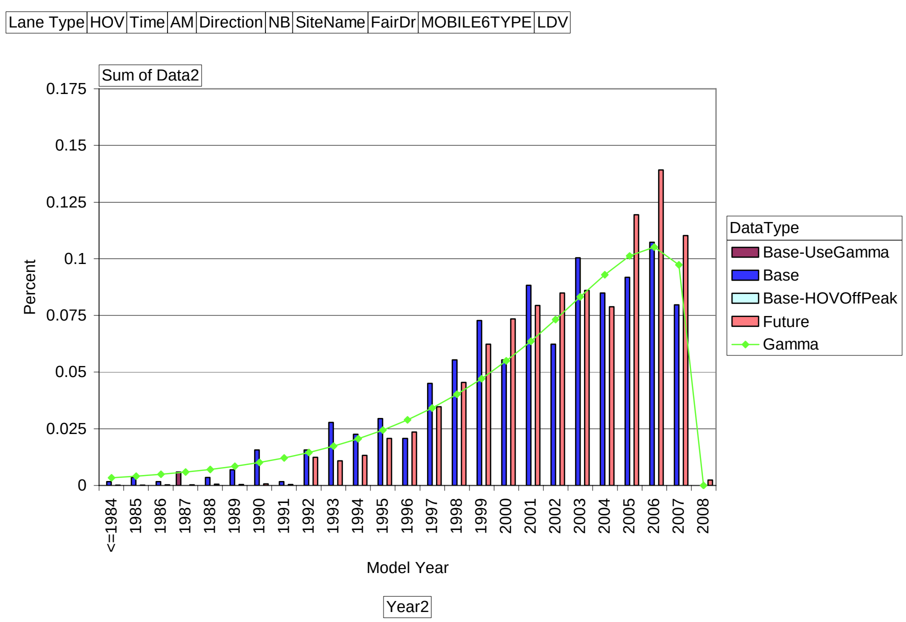

Figure C.2 Onroad Age Distribution for HOV AM NB Fair Dr. LDV

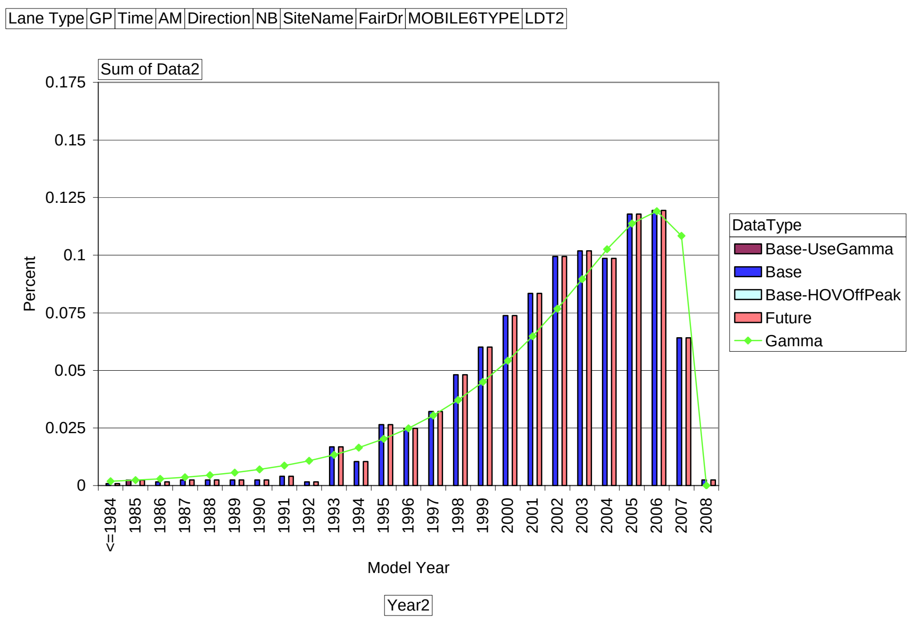

Figure C.3 Onroad Age Distribution for GP AM NB Fair Dr. LDT2

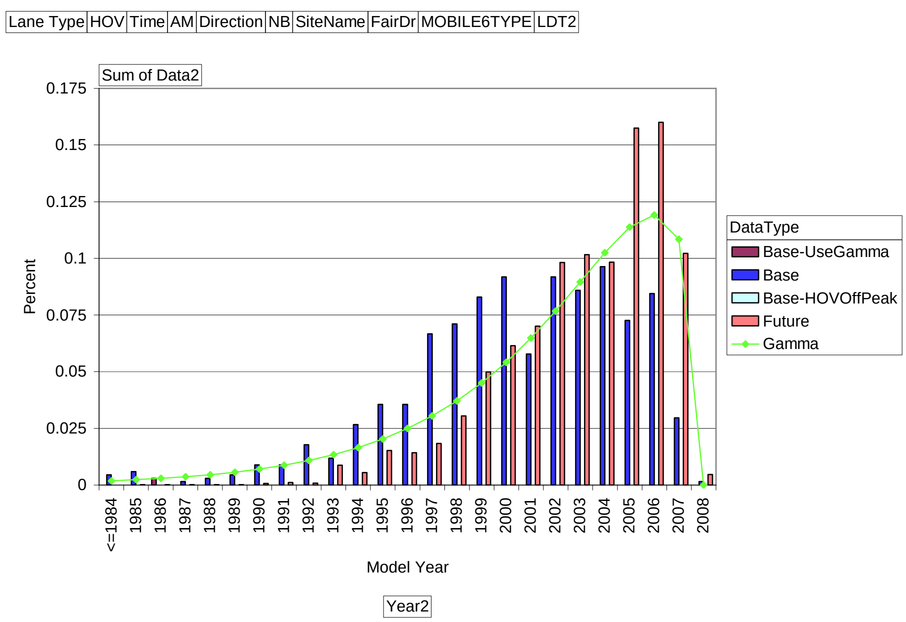

Figure C.4 Onroad Age Distribution for HOV AM NB Fair Dr. LDT2

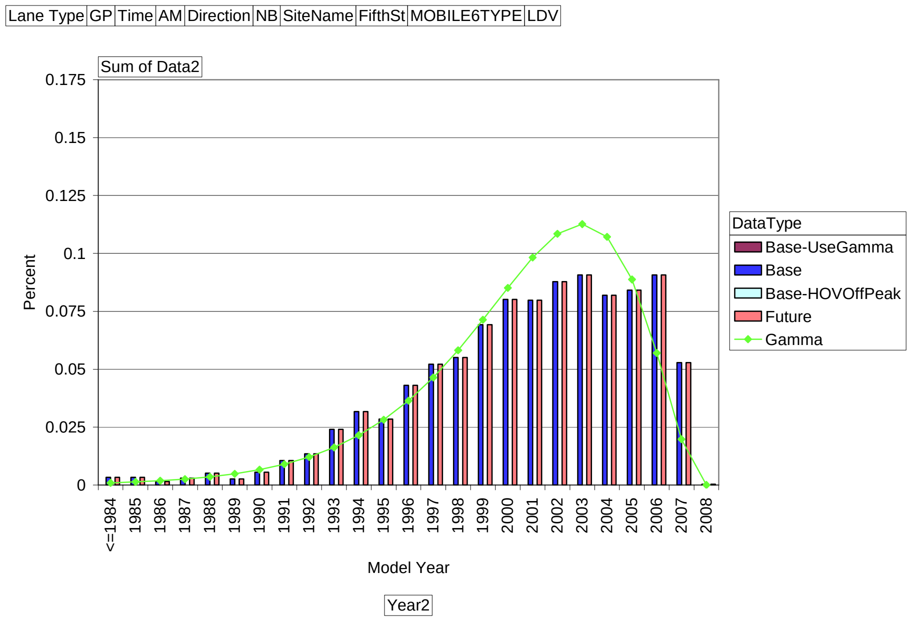

Figure C.5 Onroad Age Distribution for GP AM NB Fifth St. LDV

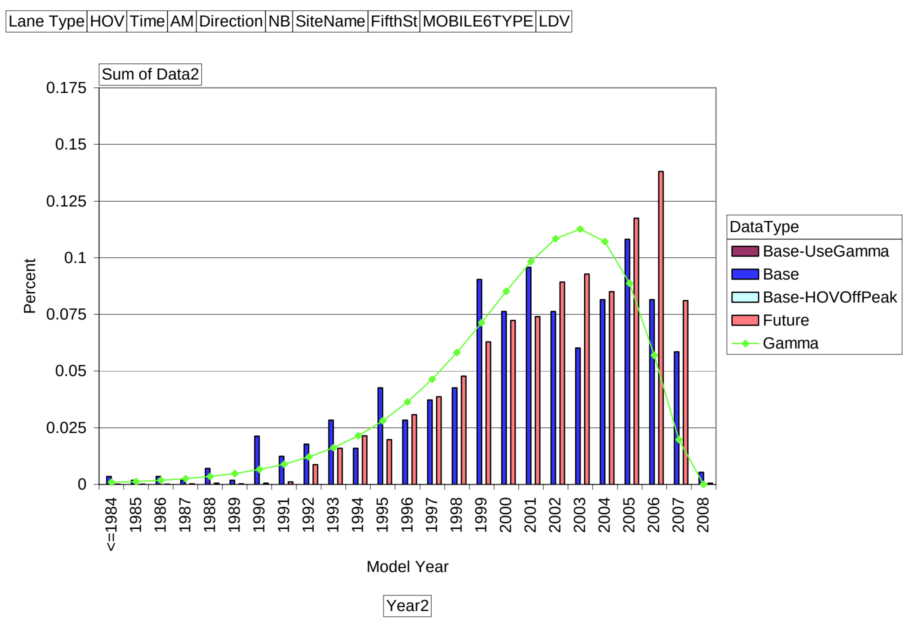

Figure C.6 Onroad Age Distribution for HOV AM NB Fifth St. LDV

Lane Type	GP	Time	AM	Direction	NB	SiteName	FifthSt	MOBILE6TYPE	LDT2

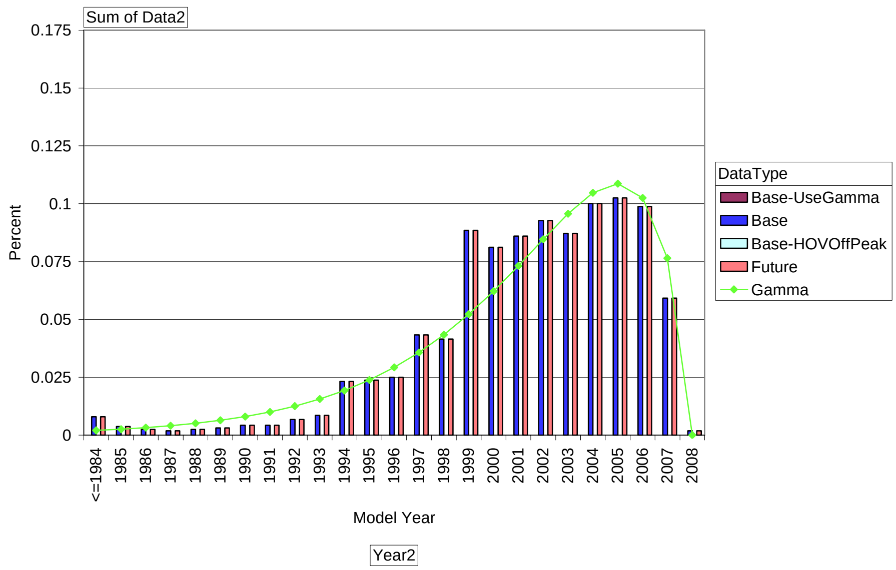

Figure C.7 Onroad Age Distribution for GP AM NB Fifth St. LDT2

Lane Type	HOV	Time	AM	Direction	NB	SiteName	FifthSt	MOBILE6TYPE	LDT2

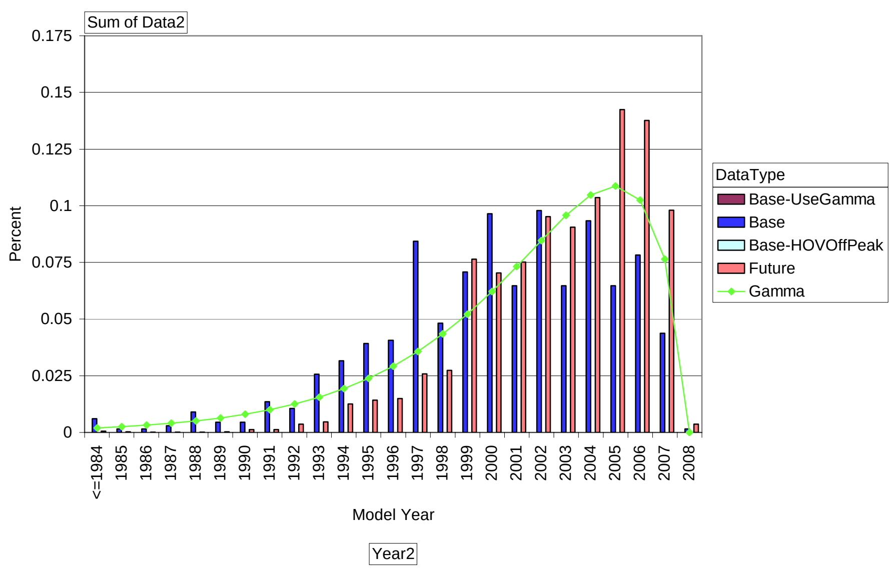

Figure C.8 Onroad Age Distribution for HOV AM NB Fifth St. LDT2

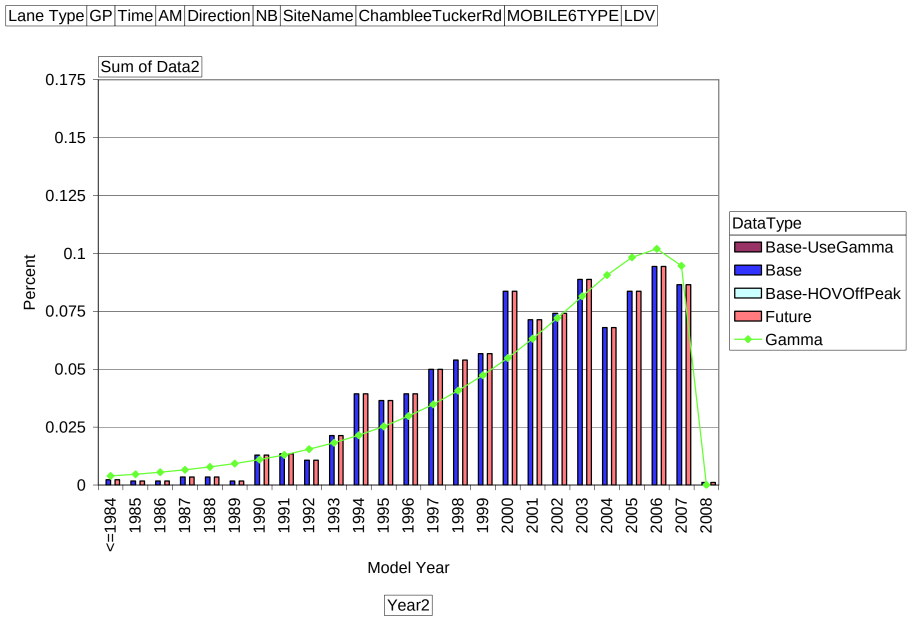

Figure C.9 Onroad Age Distribution for GP AM NB Chamblee Tucker Rd. LDV

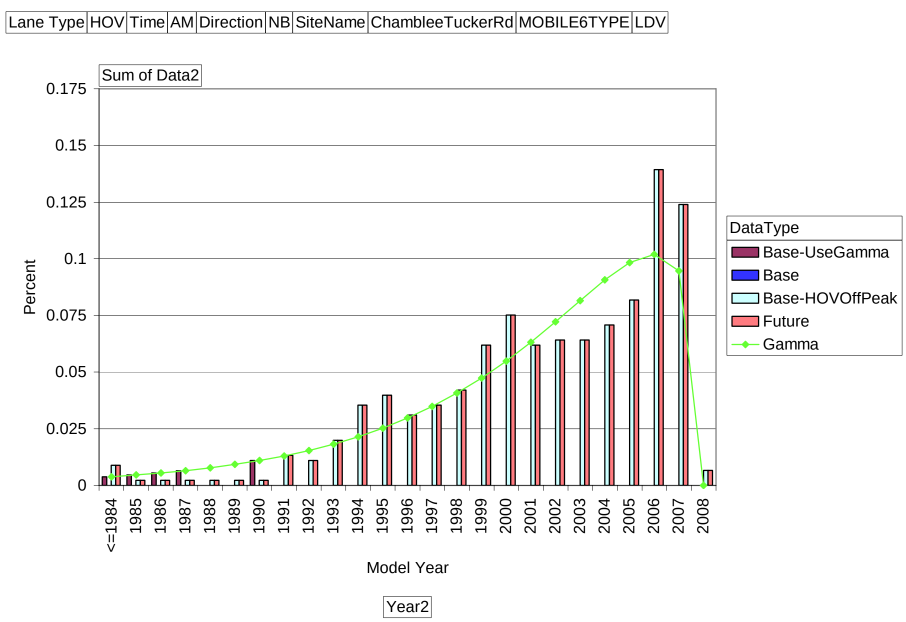

Figure C.10 Onroad Age Distribution for HOV AM NB Chamblee Tucker Rd. LDV

Lane Type | GP | Time | AM | Direction | NB | SiteName | ChambleeTuckerRd | MOBILE6TYPE | LDT2

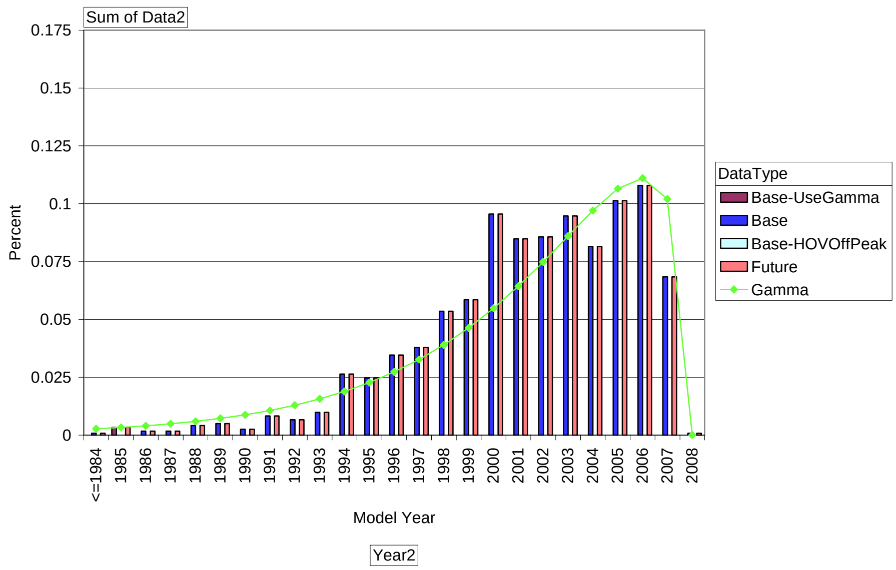

Figure C.11 Onroad Age Distribution for GP AM NB Chamblee Tucker Rd. LDT2

Lane Type | HOV | Time | AM | Direction | NB | SiteName | ChambleeTuckerRd | MOBILE6TYPE | LDT2

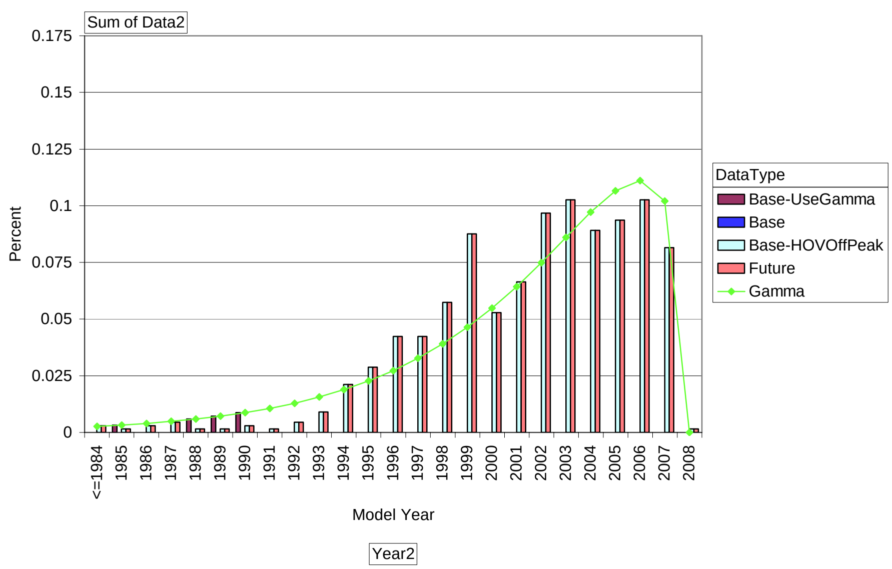

Figure C.12 Onroad Age Distribution for HOV AM NB Chamblee Tucker Rd. LDT2

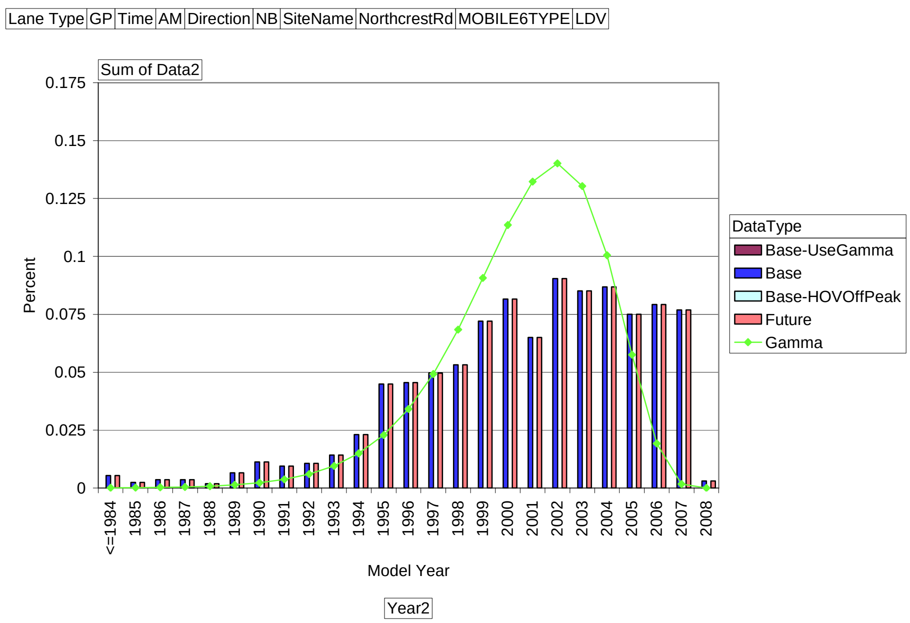

Figure C.13 Onroad Age Distribution for GP AM NB Northcrest Rd. LDV

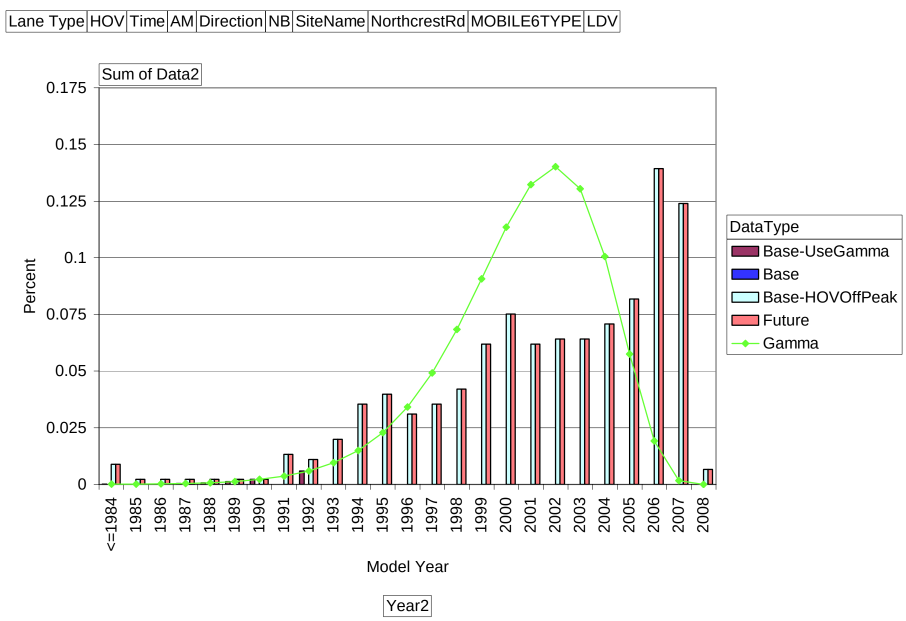

Figure C.14 Onroad Age Distribution for HOV AM NB Northcrest Rd. LDV

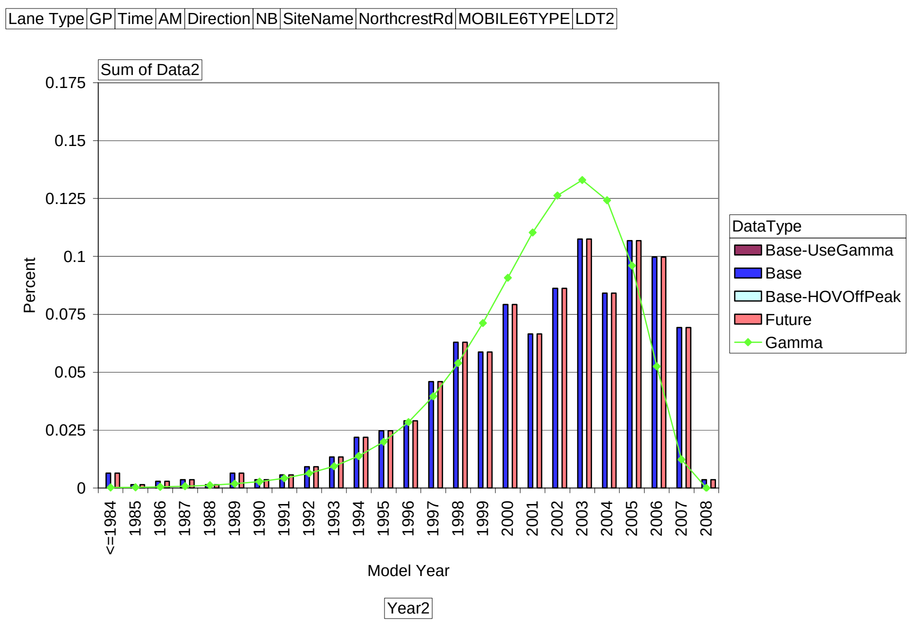

Figure C.15 Onroad Age Distribution for GP AM NB Northcrest Rd. LDT2

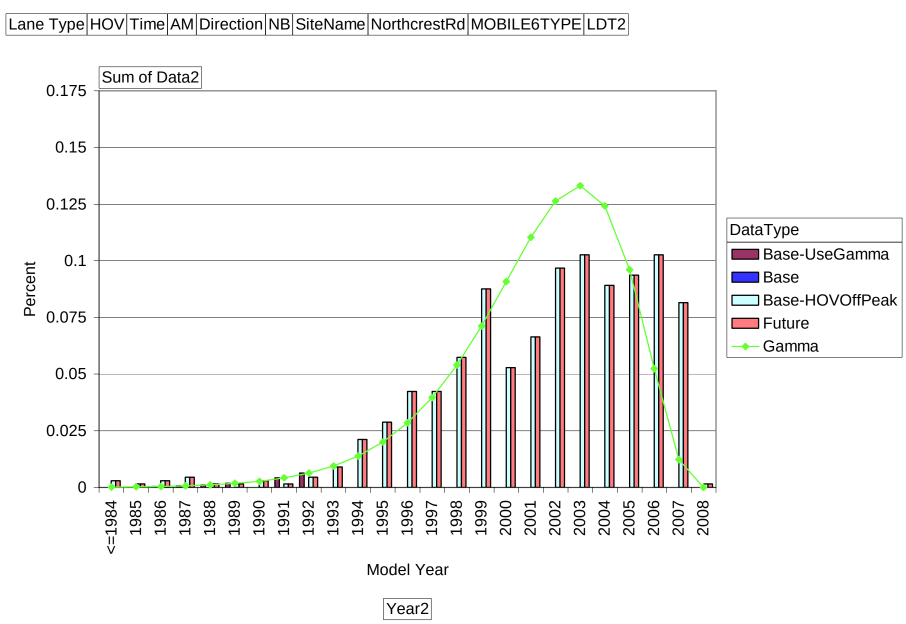

Figure C.16 Onroad Age Distribution for HOV AM NB Northcrest Rd. LDT2

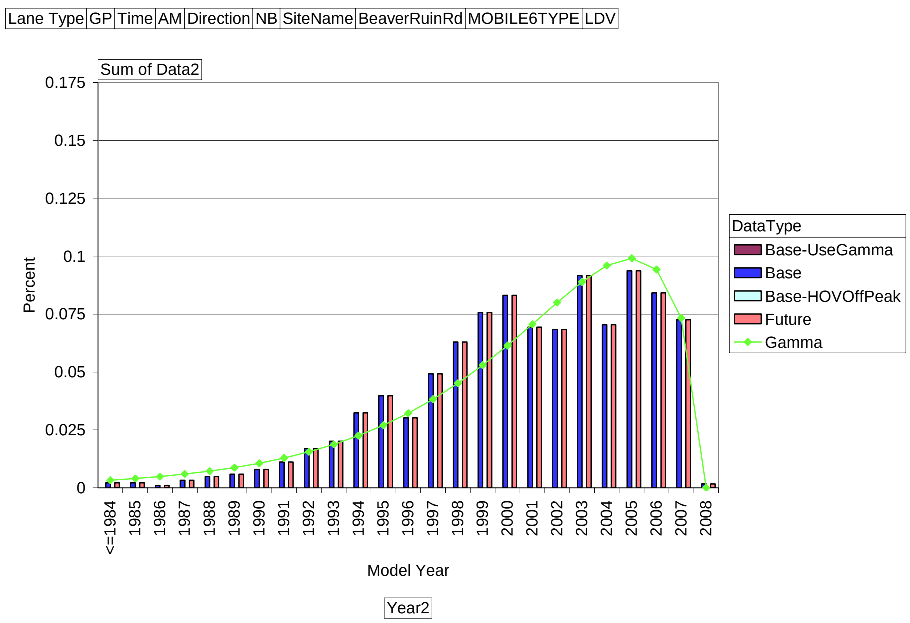

Figure C.17 Onroad Age Distribution for GP AM NB Beaver Ruin Rd. LDV

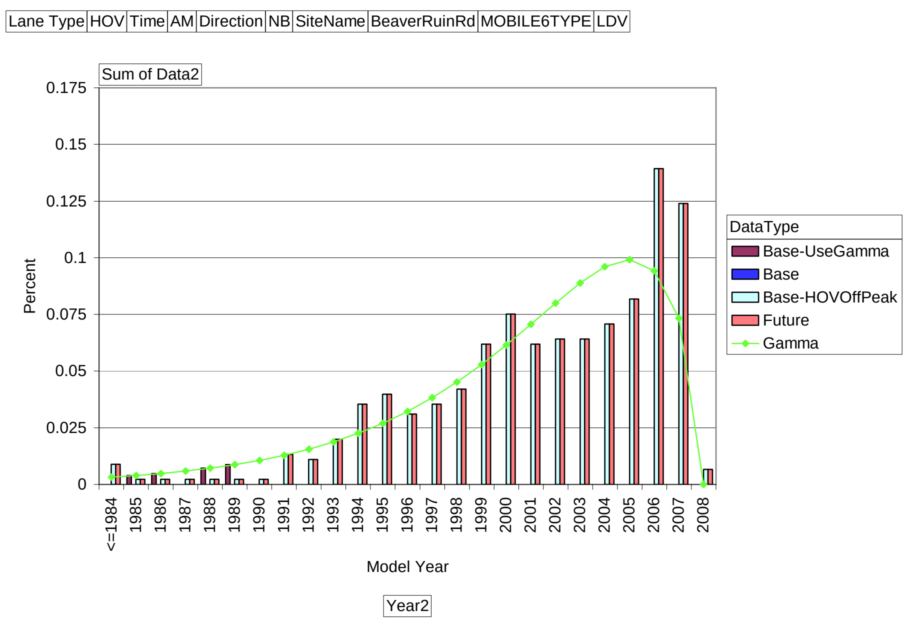

Figure C.18 Onroad Age Distribution for HOV AM NB Beaver Ruin Rd. LDV

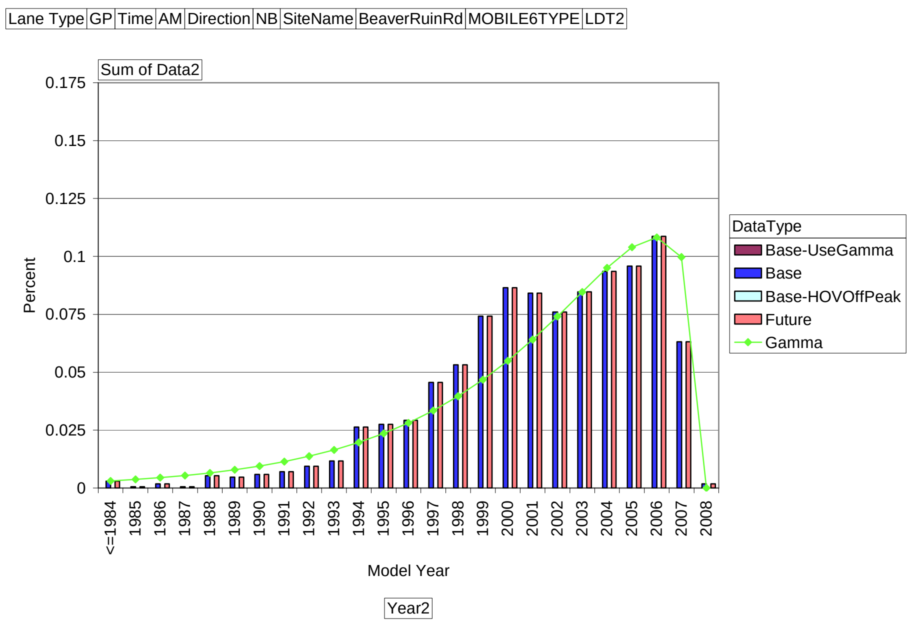

Figure C.19 Onroad Age Distribution for GP AM NB Beaver Ruin Rd. LDT2

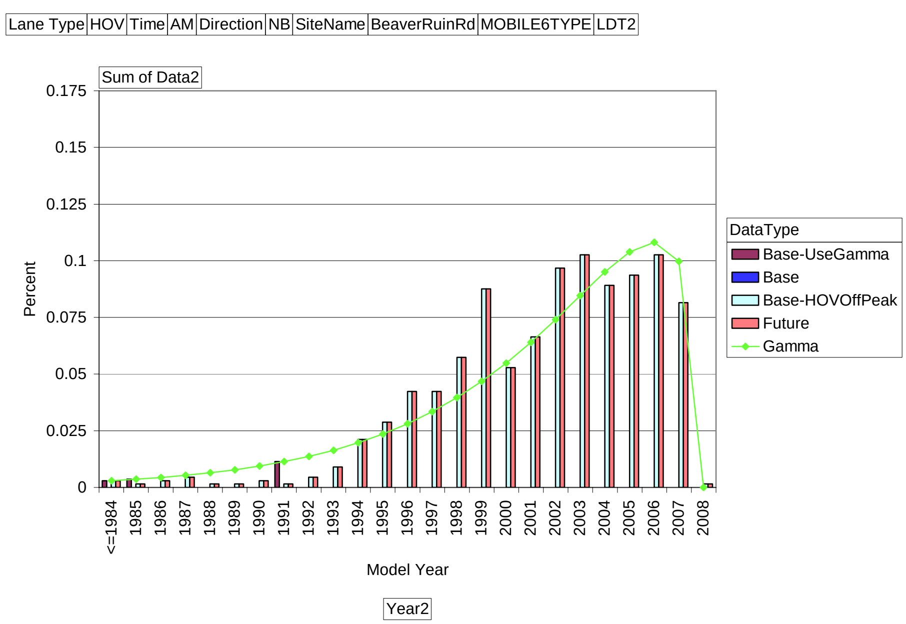

Figure C.20 Onroad Age Distribution for HOV AM NB Beaver Ruin Rd. LDT2

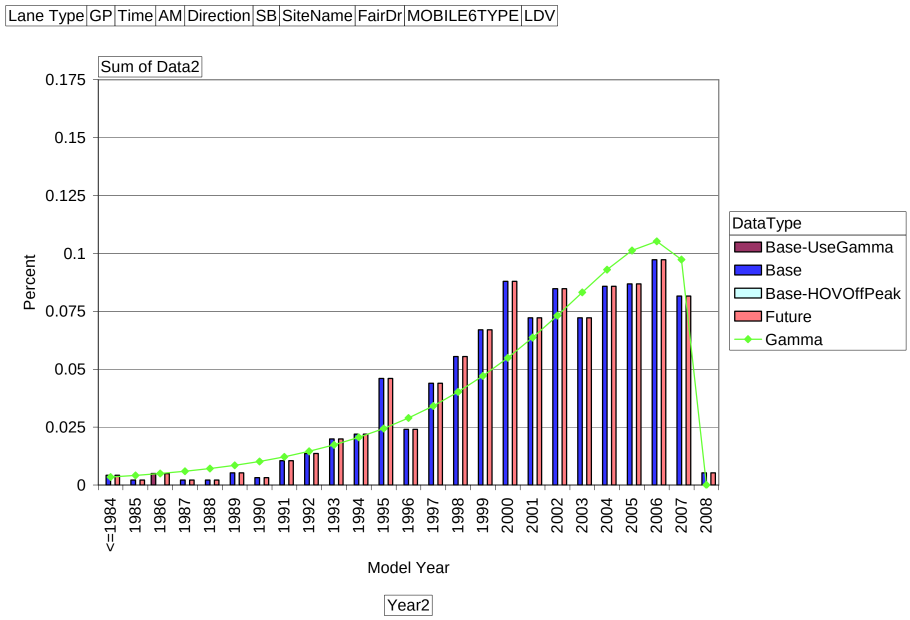

Figure C.21 Onroad Age Distribution for GP AM SB Fair Dr. LDV

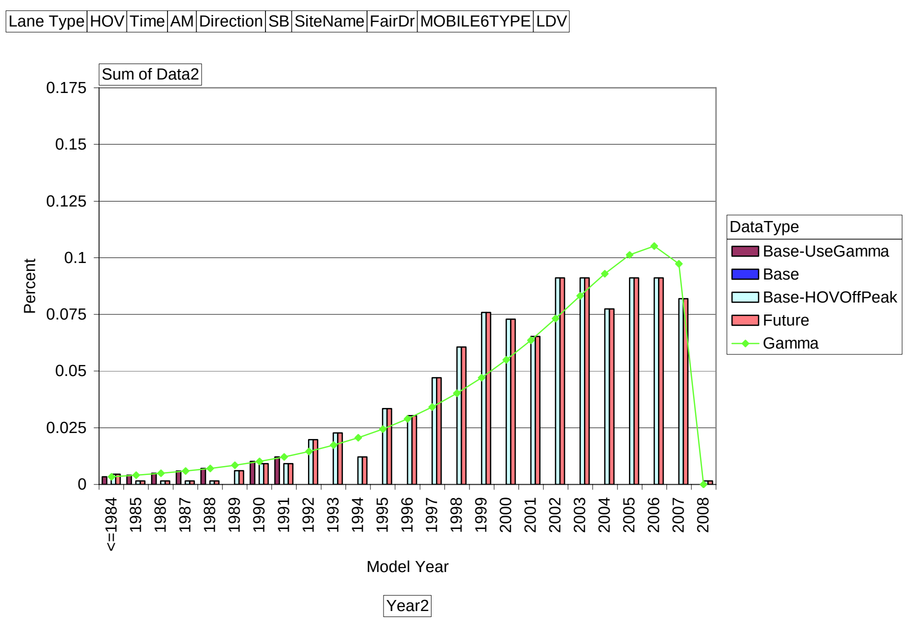

Figure C.22 Onroad Age Distribution for HOV AM SB Fair Dr. LDV

Lane Type	GP	Time	AM	Direction	SB	SiteName	FairDr	MOBILE6TYPE	LDT2

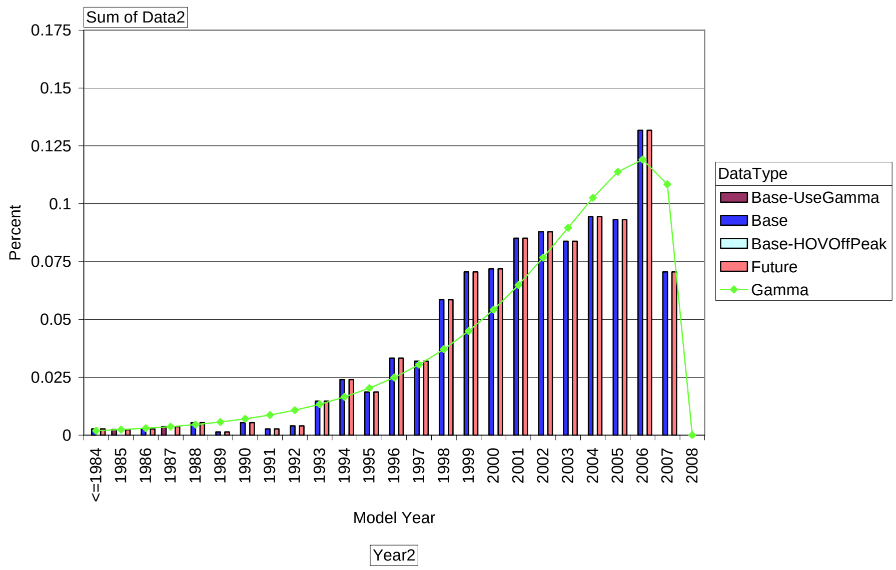

Figure C.23 Onroad Age Distribution for GP AM SB Fair Dr. LDT2

Lane Type	HOV	Time	AM	Direction	SB	SiteName	FairDr	MOBILE6TYPE	LDT2

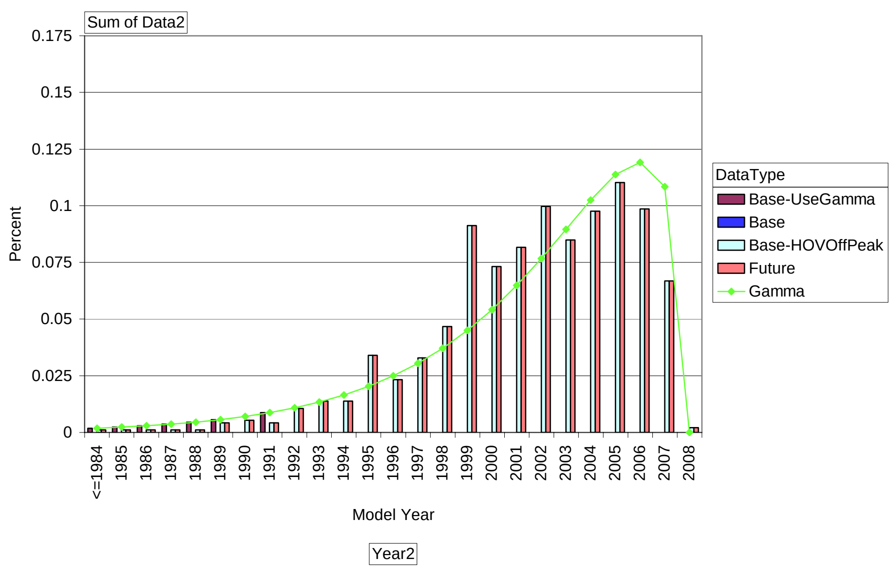

Figure C.24 Onroad Age Distribution for HOV AM SB Fair Dr. LDT2

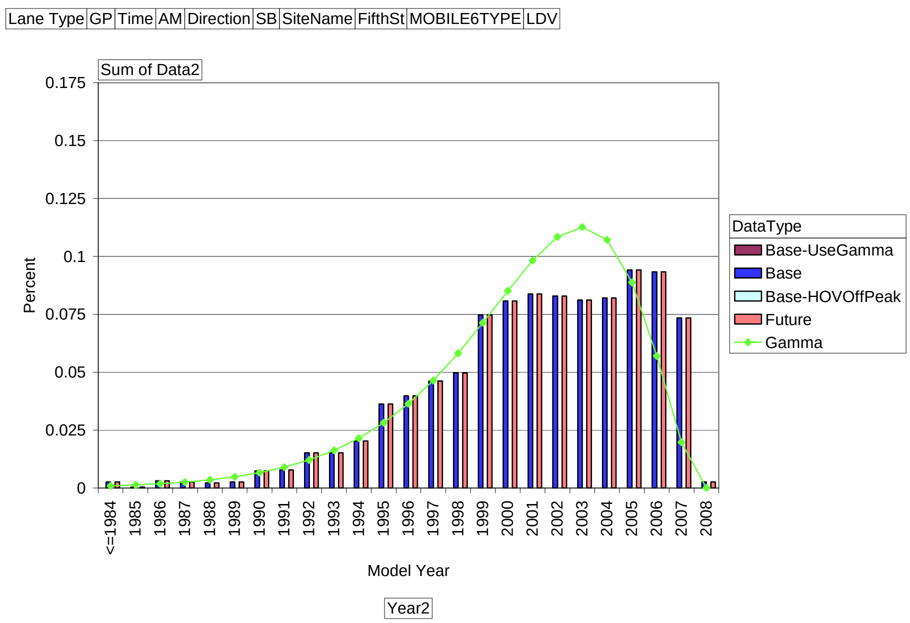

Figure C.25 Onroad Age Distribution for GP AM SB Fifth St. LDV

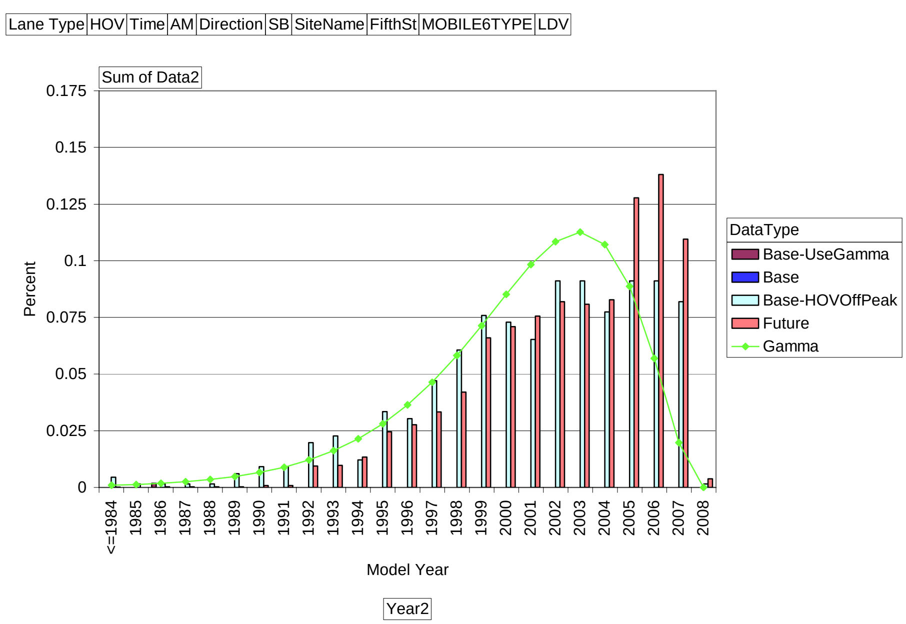

Figure C.26 Onroad Age Distribution for HOV AM SB Fifth St. LDV

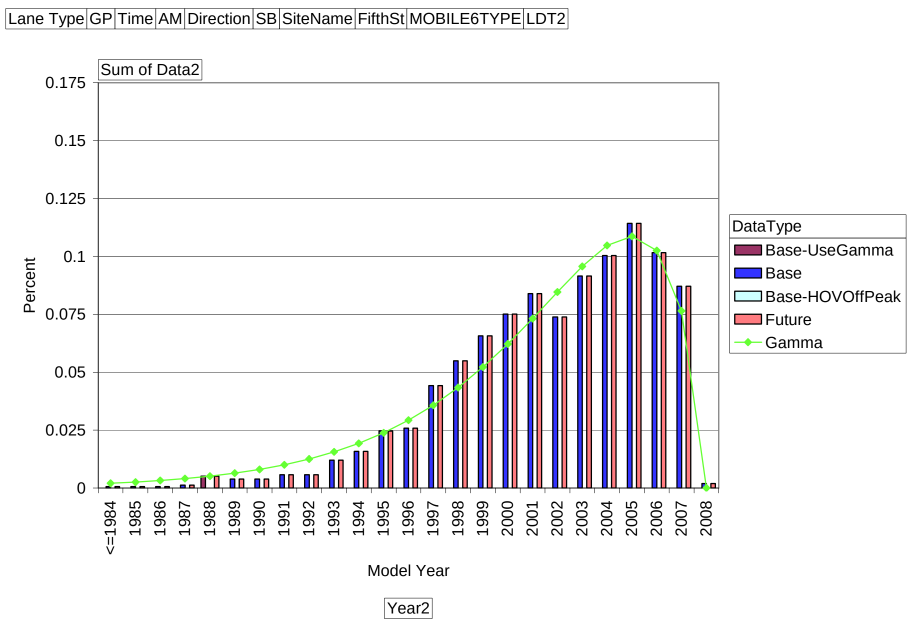

Figure C.27 Onroad Age Distribution for GP AM SB Fifth St. LDT2

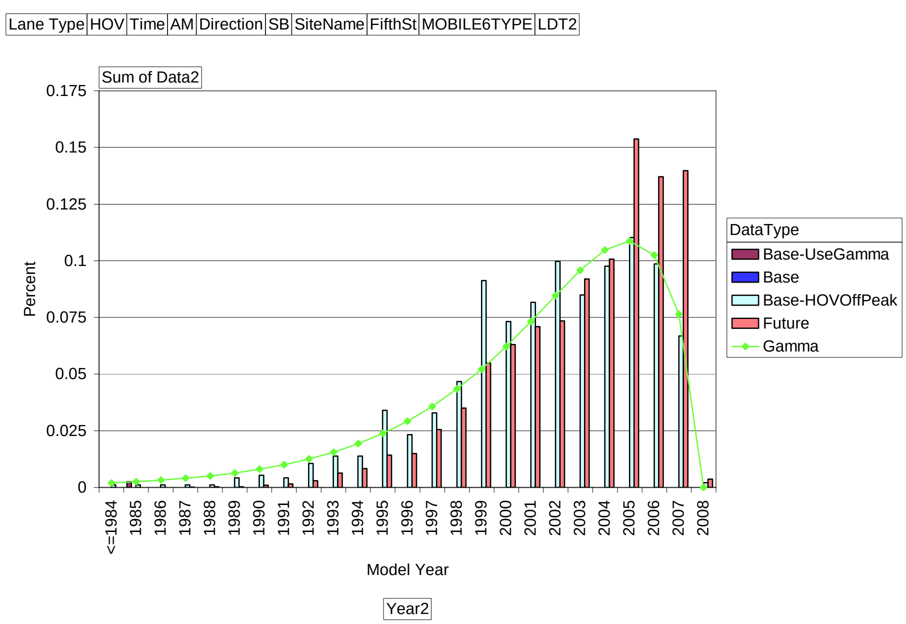

Figure C.28 Onroad Age Distribution for HOV AM SB Fifth St. LDT2

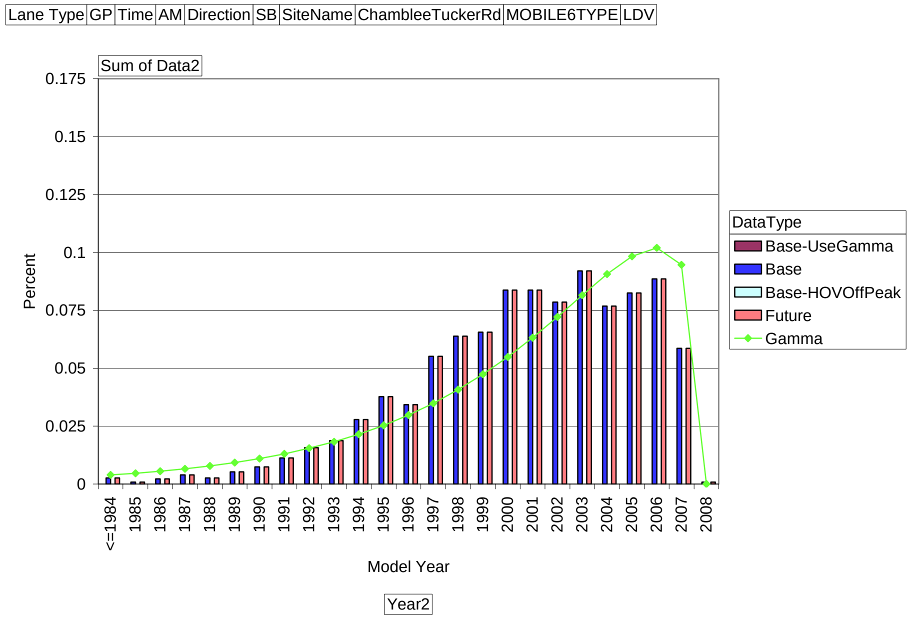

Figure C.29 Onroad Age Distribution for GP AM SB Chamblee Tucker Rd. LDV

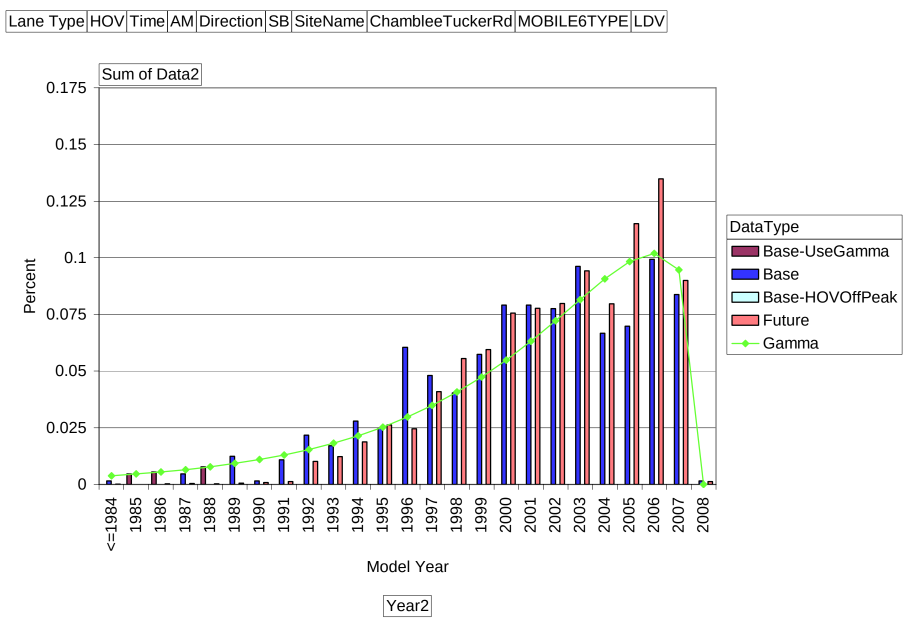

Figure C.30 Onroad Age Distribution for HOV AM SB Chamblee Tucker Rd. LDV

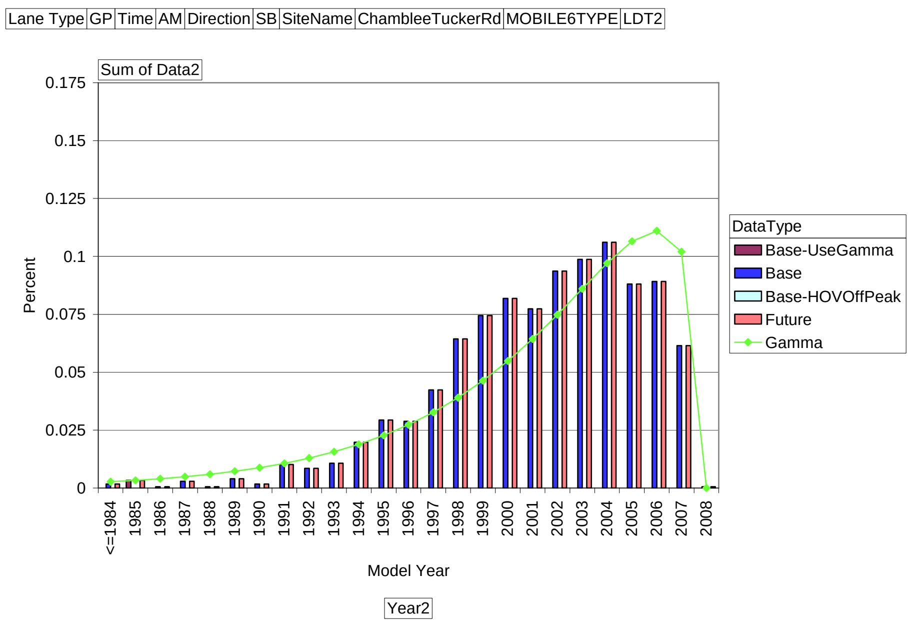

Figure C.31 Onroad Age Distribution for GP AM SB Chamblee Tucker Rd. LDT2

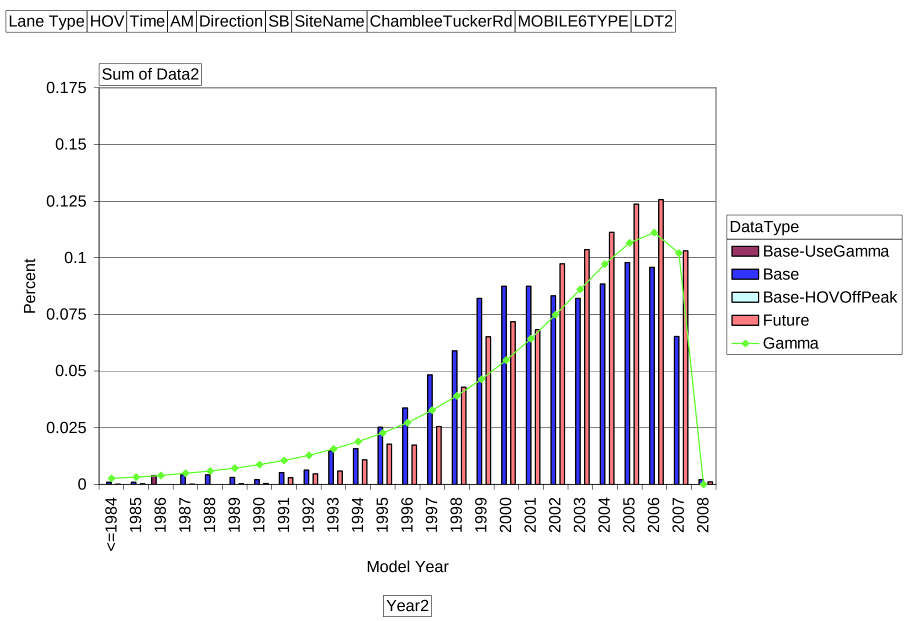

Figure C.32 Onroad Age Distribution for HOV AM SB Chamblee Tucker Rd. LDT2

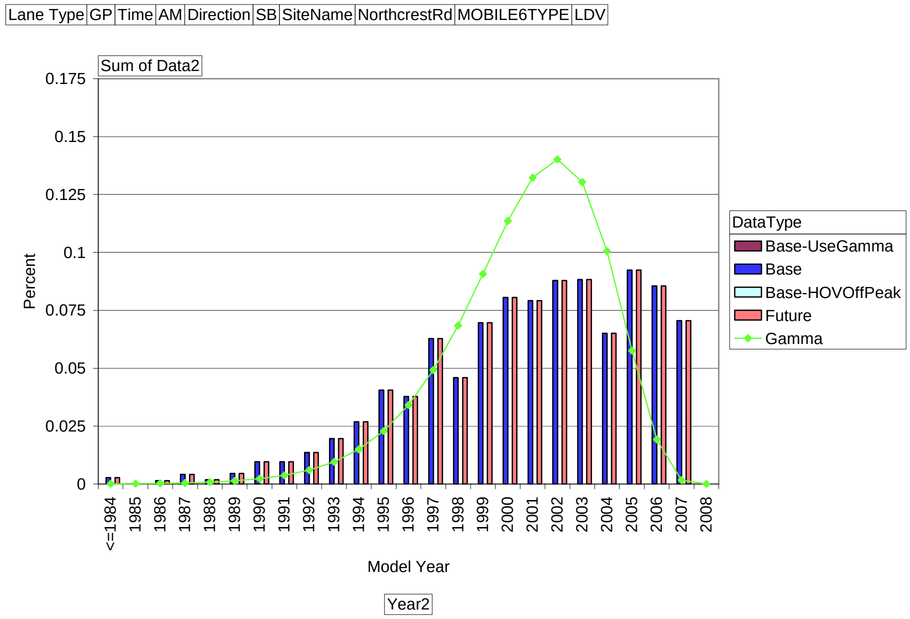

Figure C.33 Onroad Age Distribution for GP AM SB Northcrest Rd. LDV

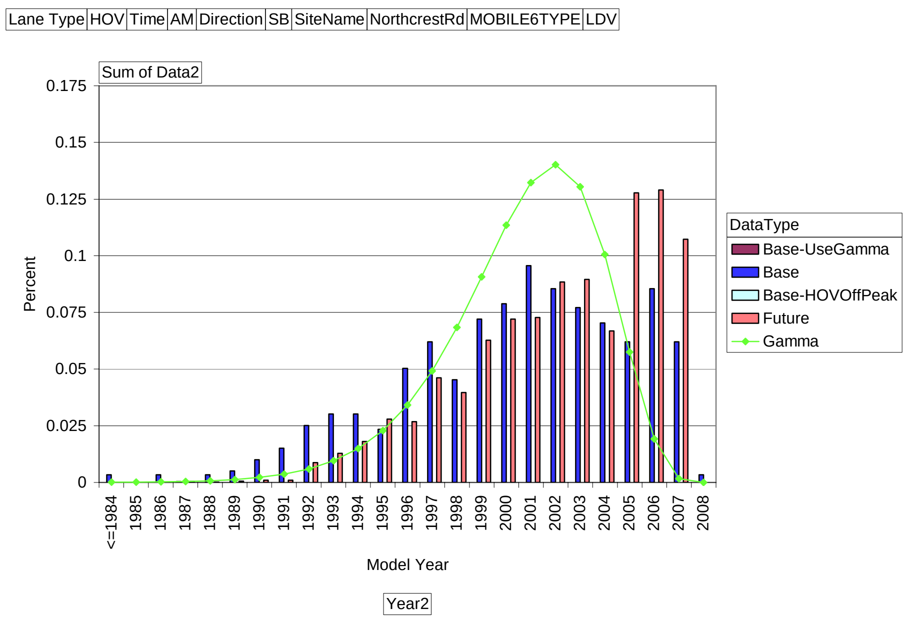

Figure C.34 Onroad Age Distribution for HOV AM SB Northcrest Rd. LDV

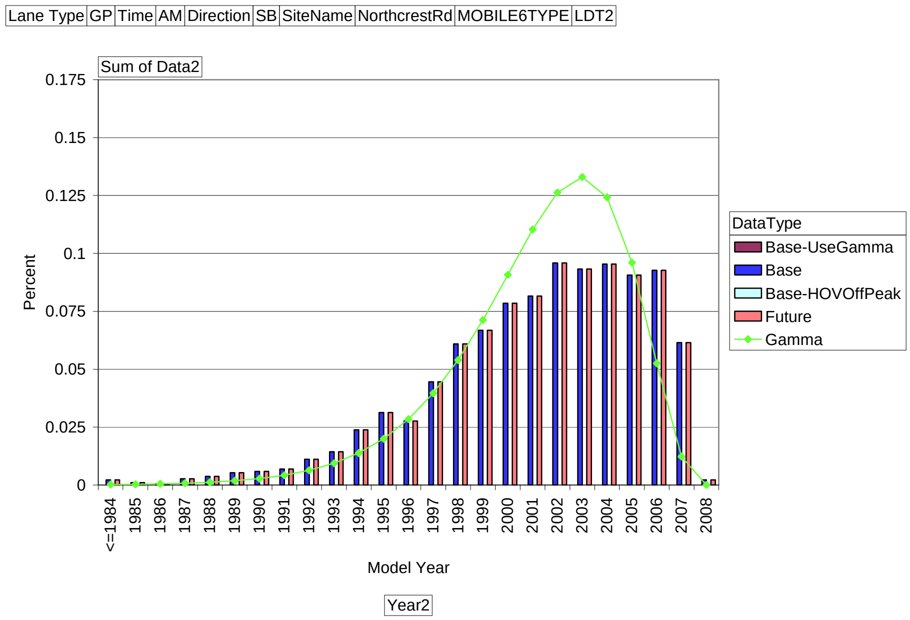

Figure C.35 Onroad Age Distribution for GP AM SB Northcrest Rd. LDT2

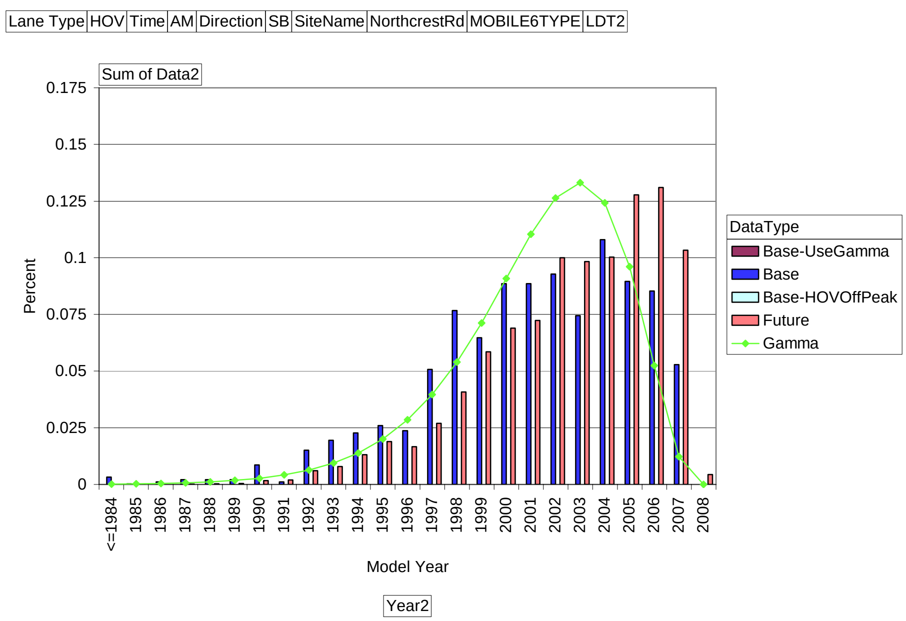

Figure C.36 Onroad Age Distribution for HOV AM SB Northcrest Rd. LDT2

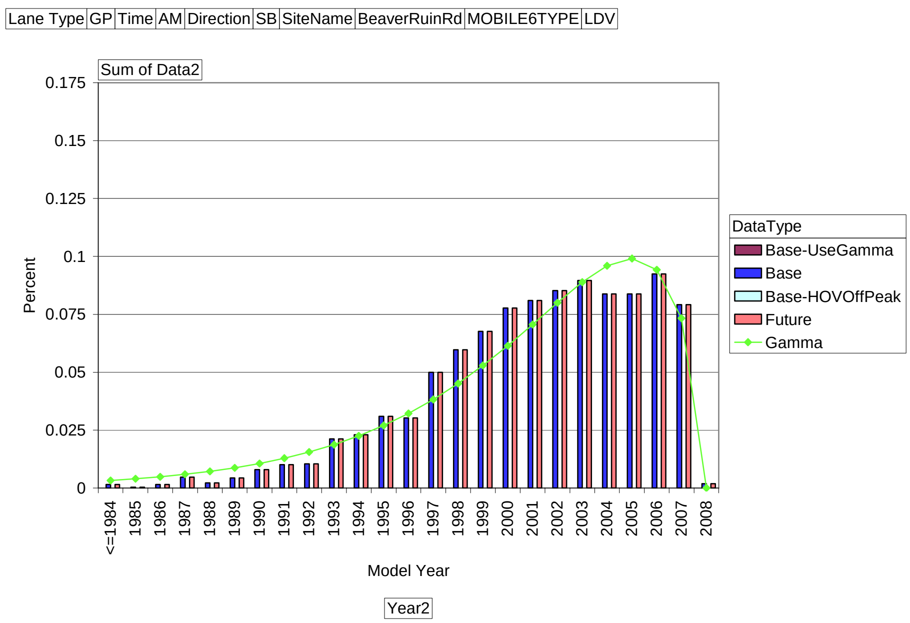

Figure C.37 Onroad Age Distribution for GP AM SB Beaver Ruin Rd. LDV

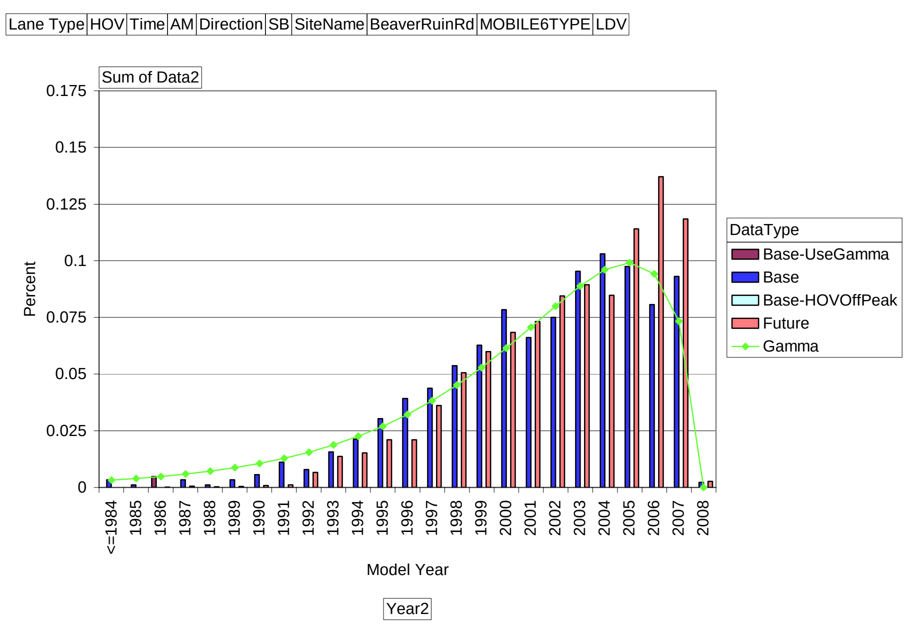

Figure C.38 Onroad Age Distribution for HOV AM SB Beaver Ruin Rd. LDV

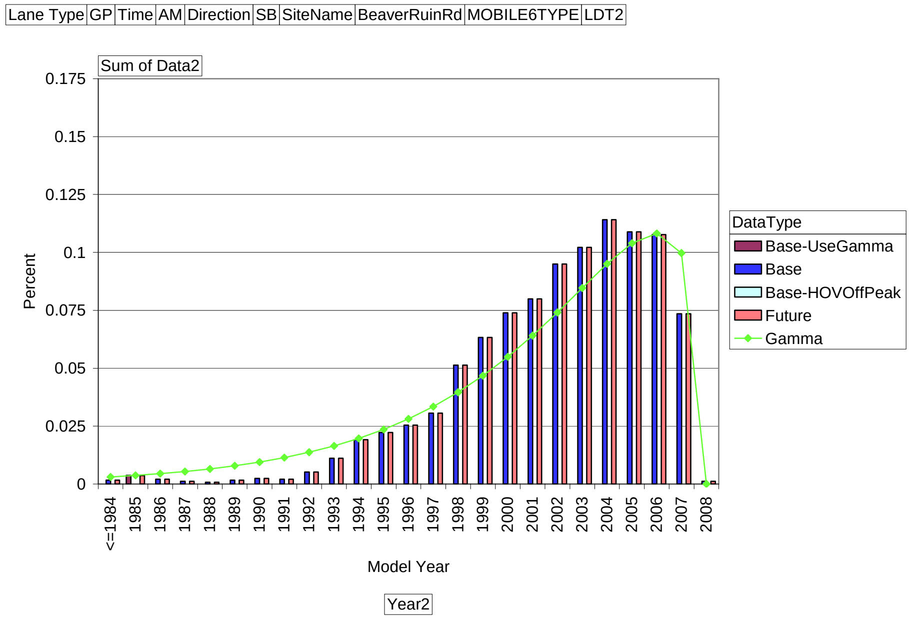

Figure C.39 Onroad Age Distribution for GP AM SB Beaver Ruin Rd. LDT2

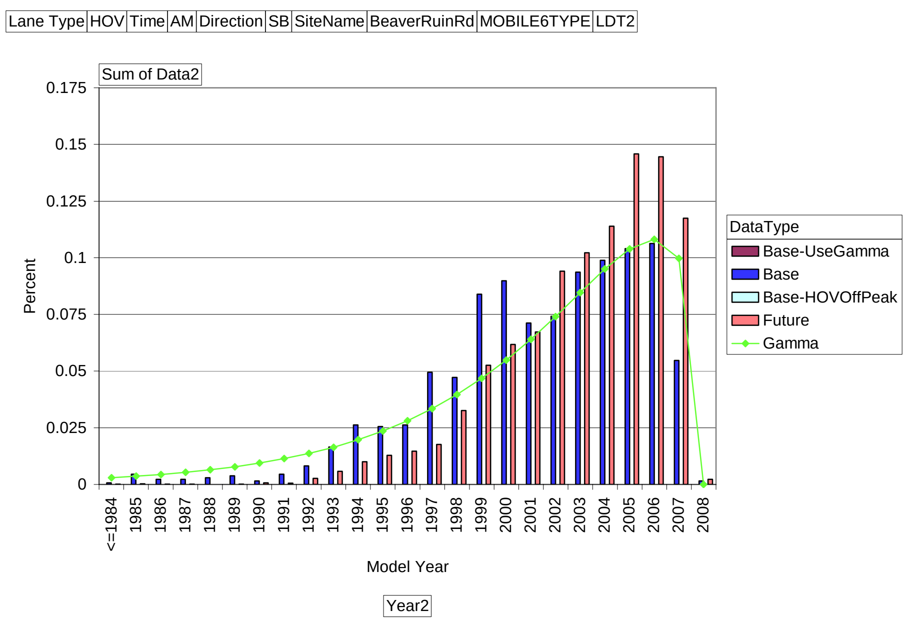

Figure C.40 Onroad Age Distribution for HOV AM SB Beaver Ruin Rd. LDT2

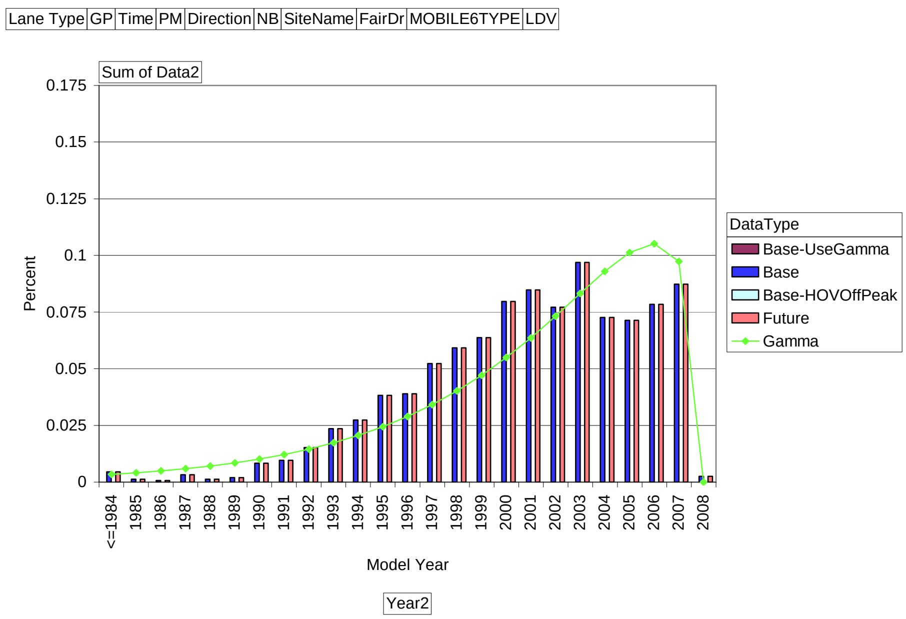

Figure C.41 Onroad Age Distribution for GP PM NB Fair Dr. LDV

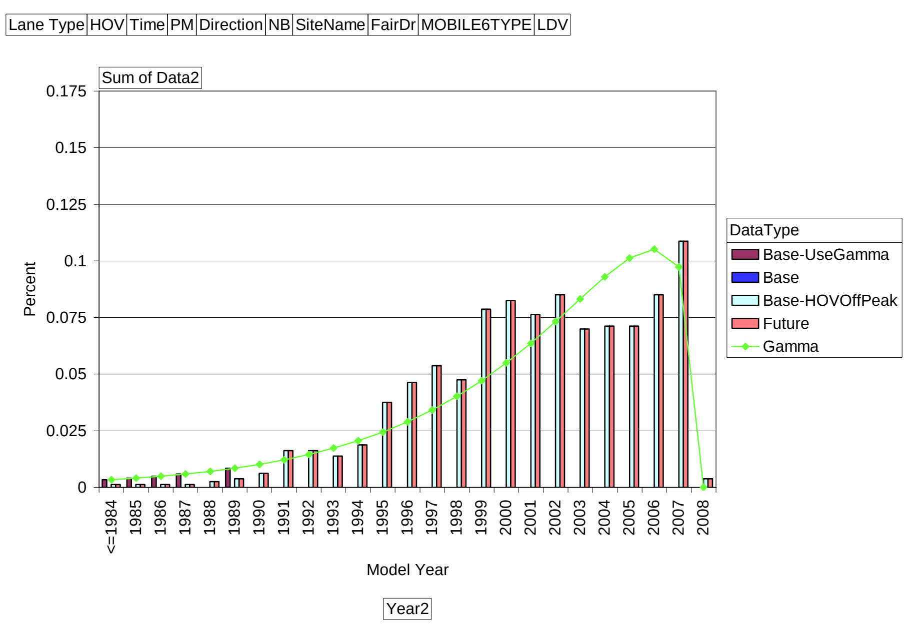

Figure C.42 Onroad Age Distribution for HOV PM NB Fair Dr. LDV

Lane Type	GP	Time	PM	Direction	NB	SiteName	FairDr	MOBILE6TYPE	LDT2

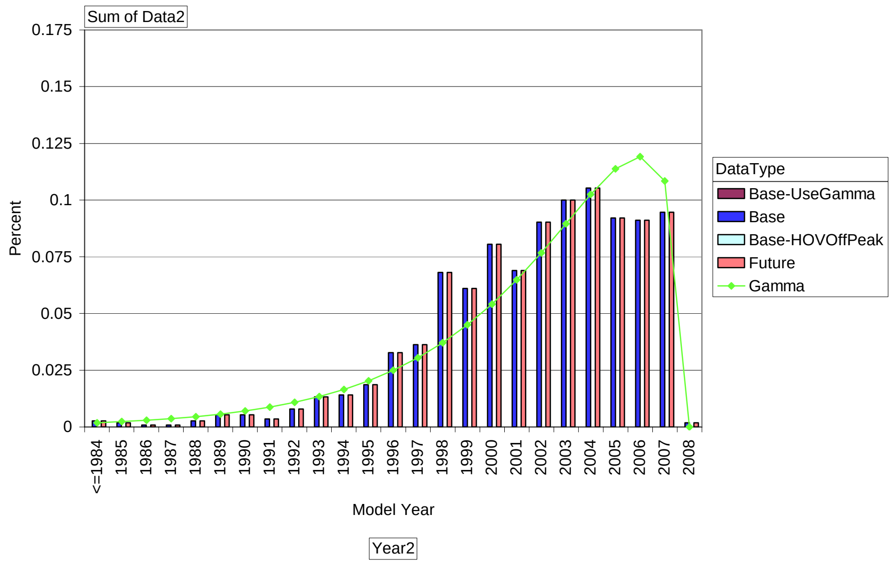

Figure C.43 Onroad Age Distribution for GP PM NB Fair Dr. LDT2

Lane Type	HOV	Time	PM	Direction	NB	SiteName	FairDr	MOBILE6TYPE	LDT2

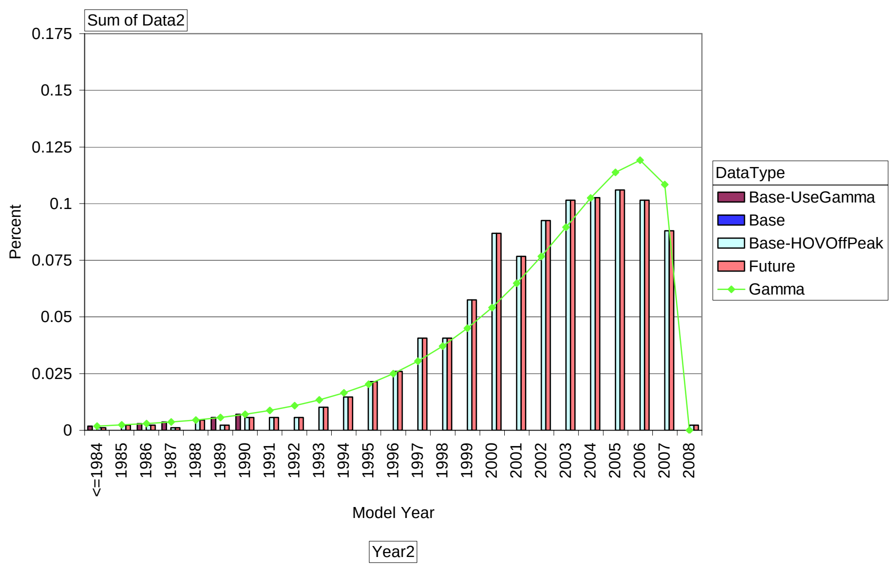

Figure C.44 Onroad Age Distribution for HOV PM NB Fair Dr. LDT2

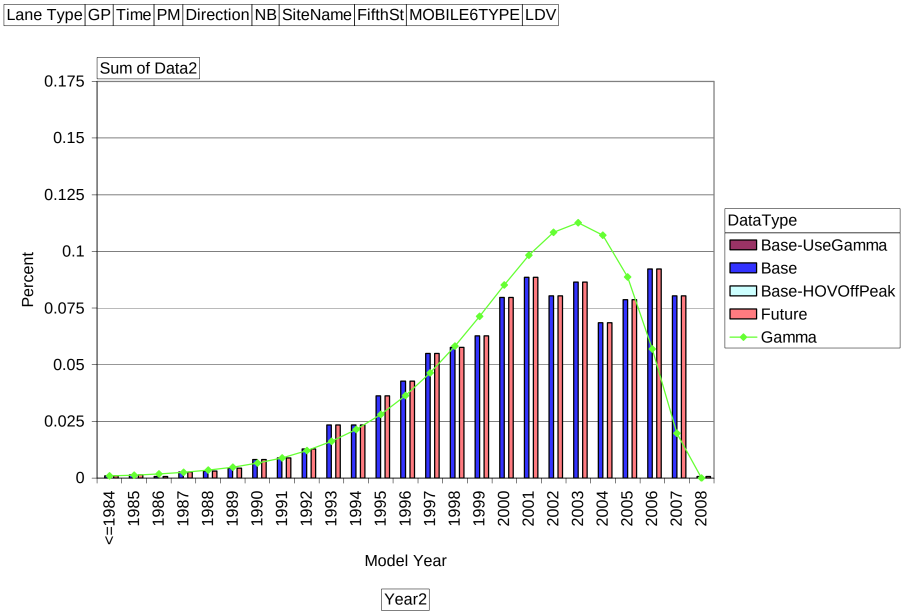

Figure C.45 Onroad Age Distribution for GP PM NB Fifth St. LDV

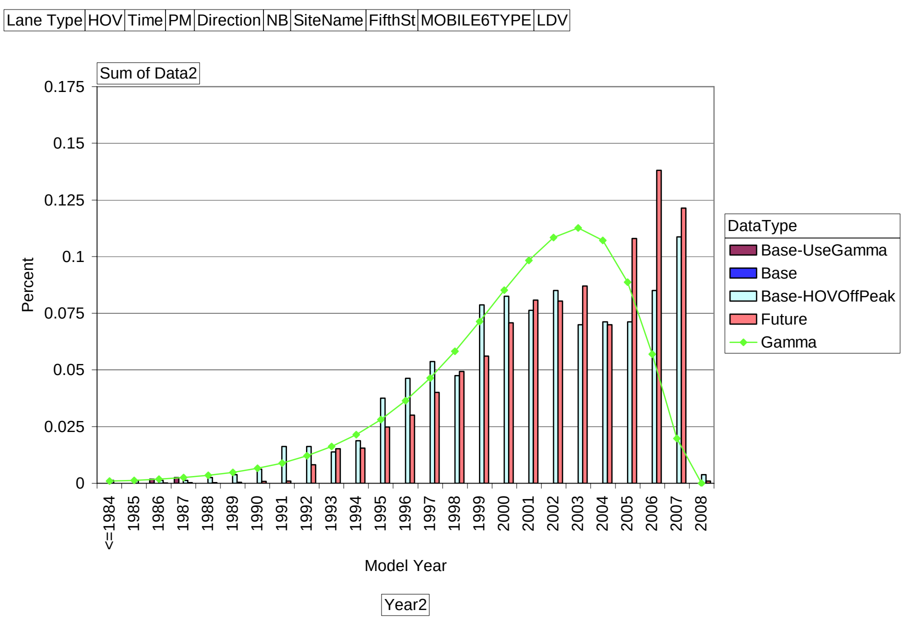

Figure C.46 Onroad Age Distribution for HOV PM NB Fifth St. LDV

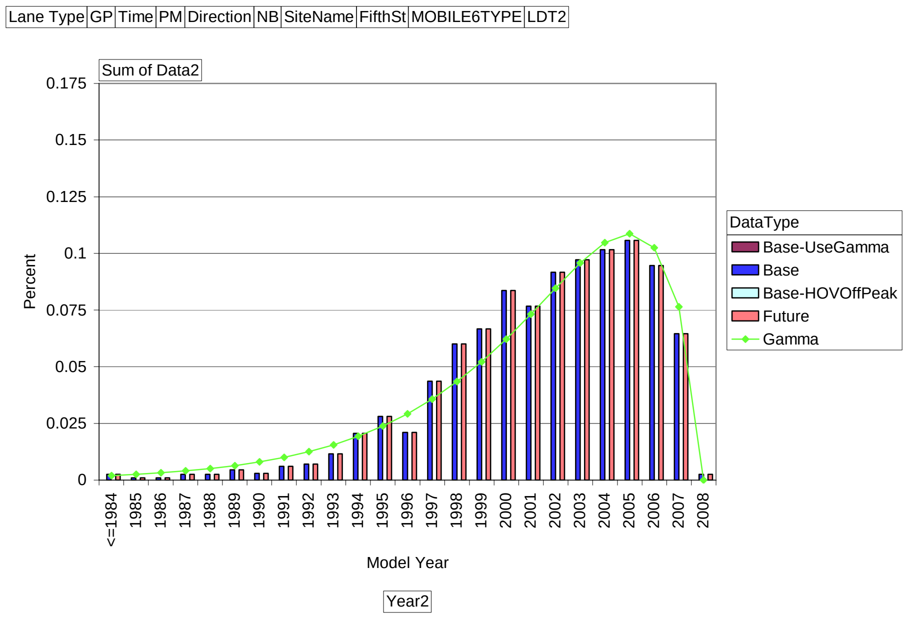

Figure C.47 Onroad Age Distribution for GP PM NB Fifth St. LDT2

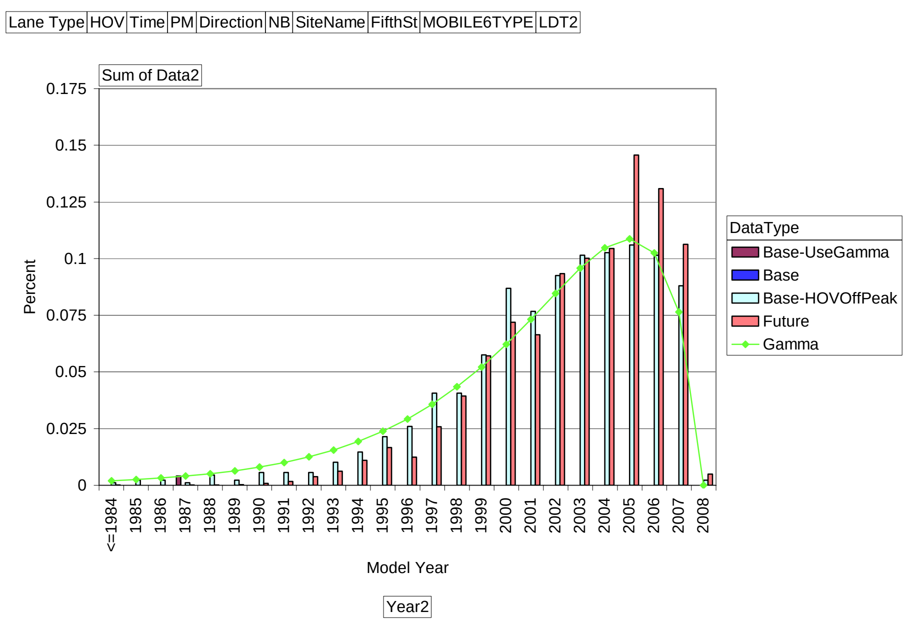

Figure C.48 Onroad Age Distribution for HOV PM NB Fifth St. LDT2

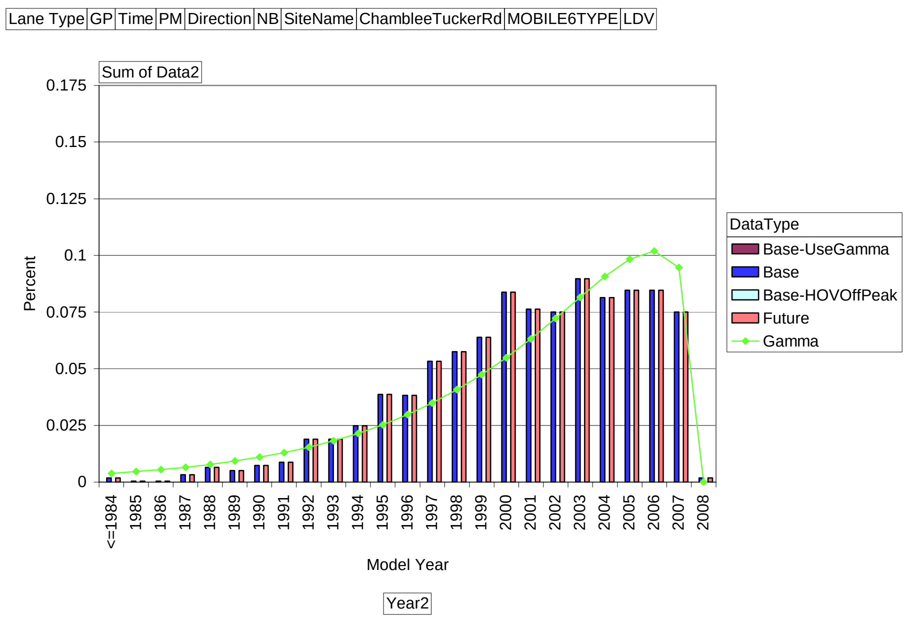

Figure C.49 Onroad Age Distribution for GP PM NB Chamblee Tucker Rd. LDV

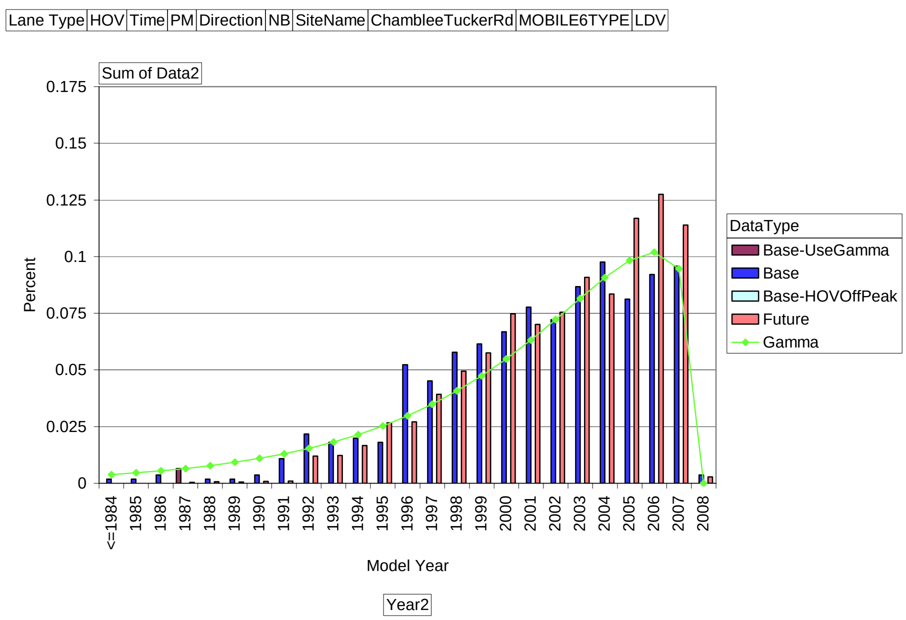

Figure C.50 Onroad Age Distribution for HOV PM NB Chamblee Tucker Rd. LDV

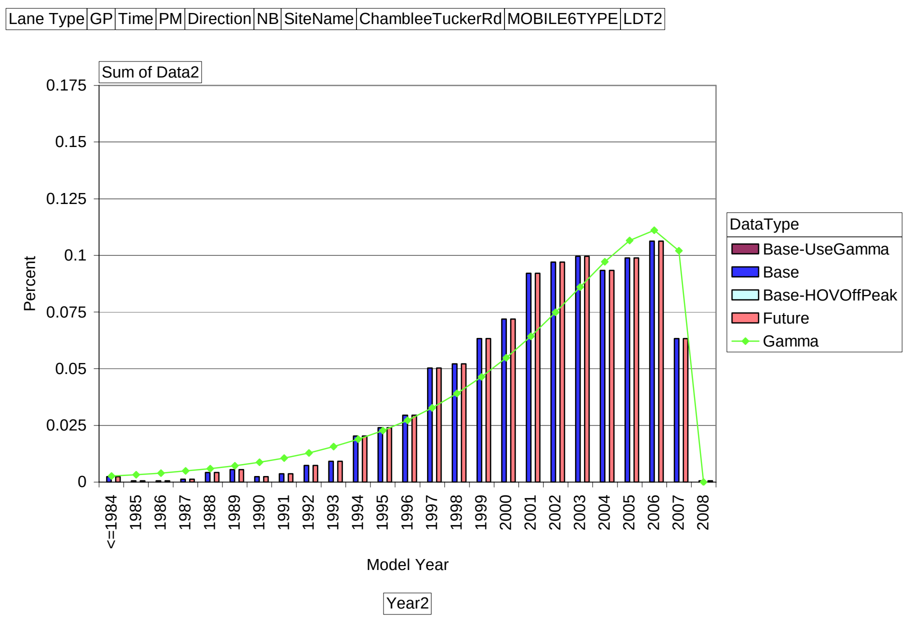

Figure C.51 Onroad Age Distribution for GP PM NB Chamblee Tucker Rd. LDT2

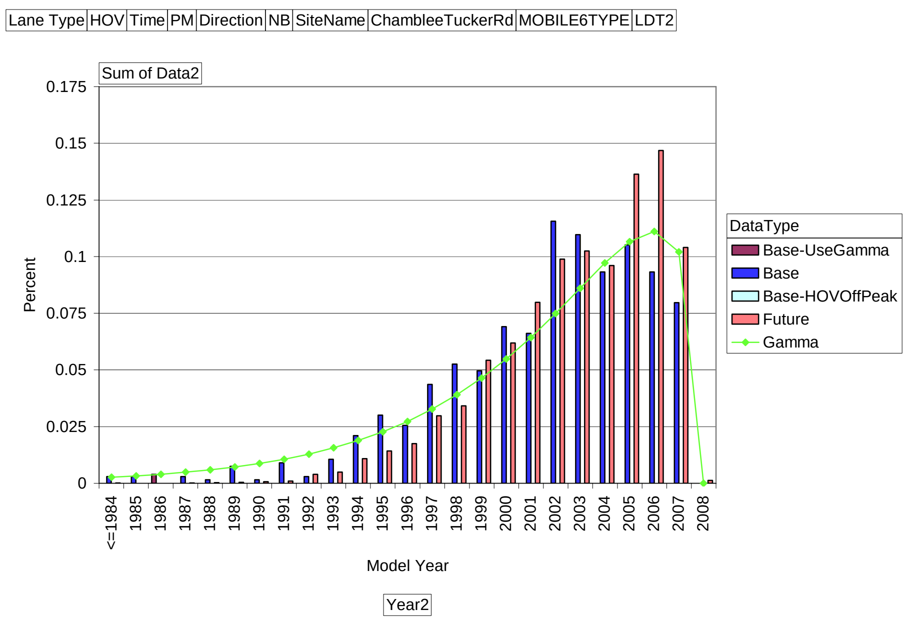

Figure C.52 Onroad Age Distribution for HOV PM NB Chamblee Tucker Rd. LDT2

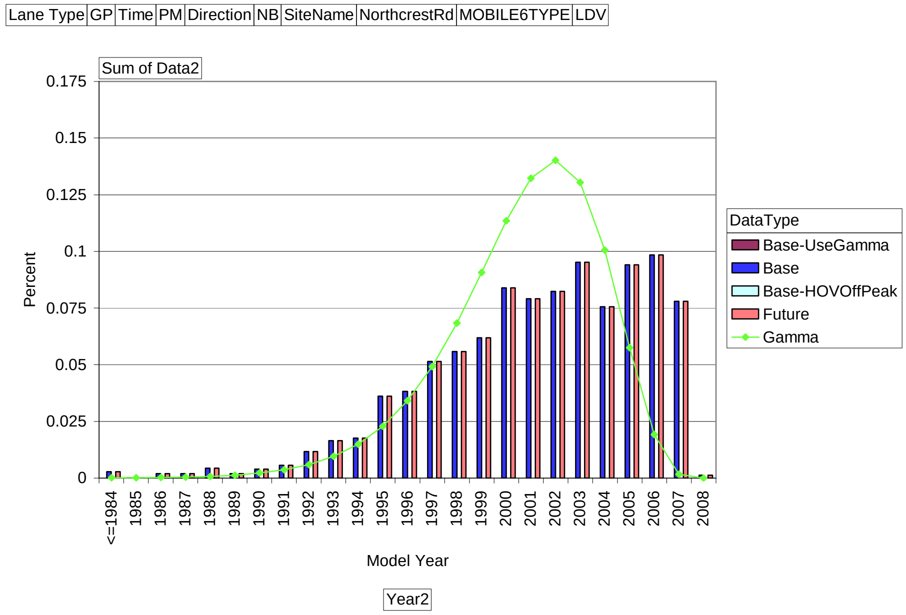

Figure C.53 Onroad Age Distribution for GP PM NB Northcrest Rd. LDV

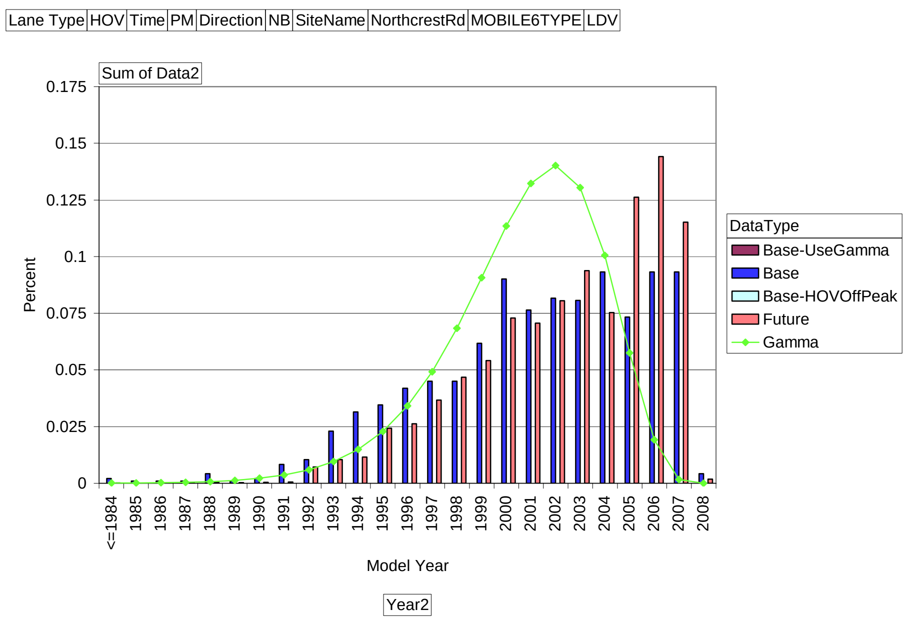

Figure C.54 Onroad Age Distribution for HOV PM NB Northcrest Rd. LDV

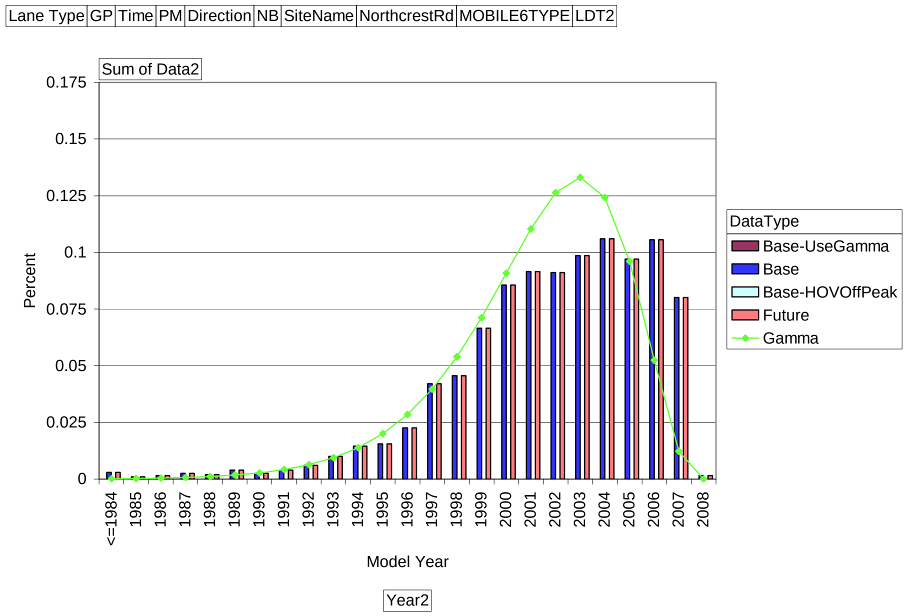

Figure C.55 Onroad Age Distribution for GP PM NB Northcrest Rd. LDT2

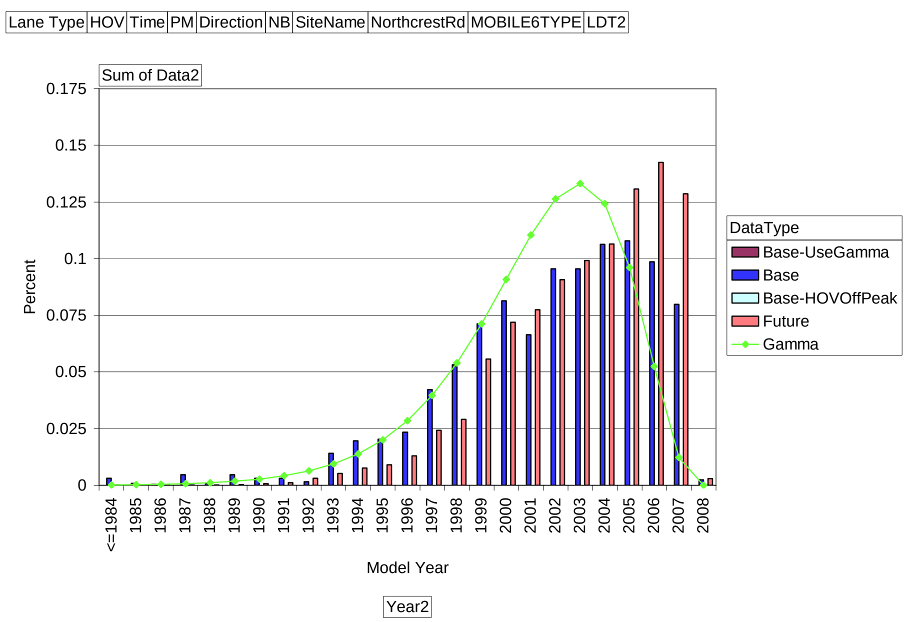

Figure C.56 Onroad Age Distribution for HOV PM NB Northcrest Rd. LDT2

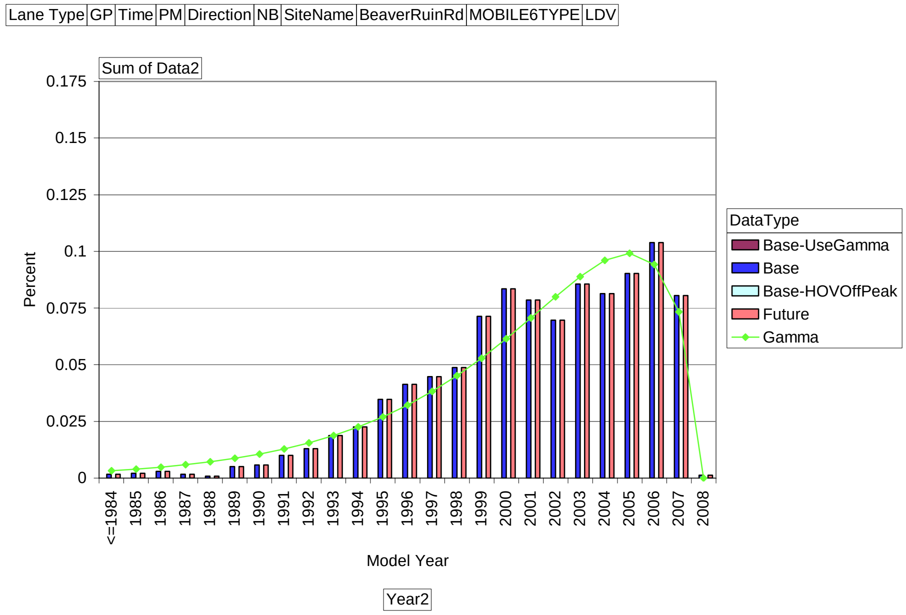

Figure C.57 Onroad Age Distribution for GP PM NB Beaver Ruin Rd. LDV

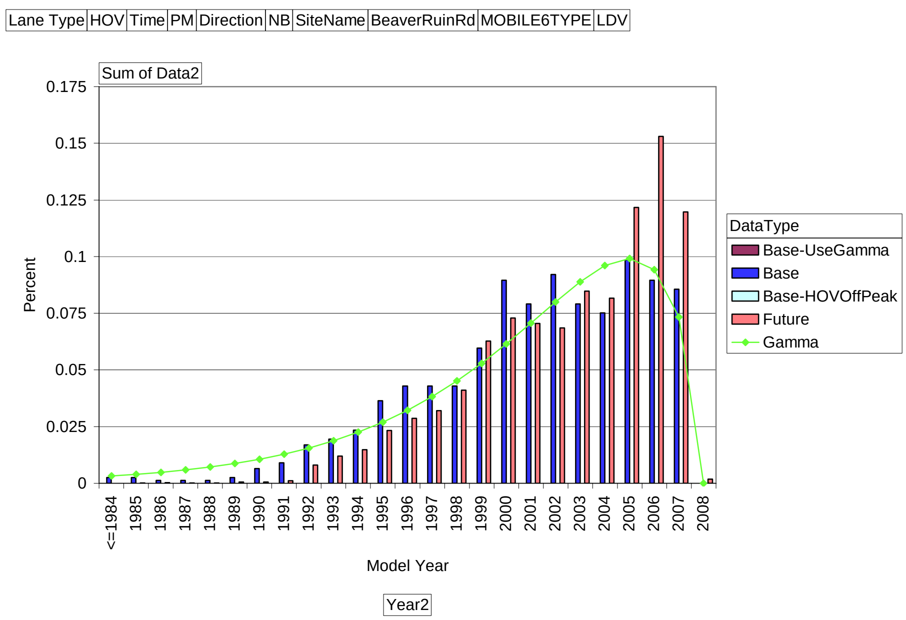

Figure C.58 Onroad Age Distribution for HOV PM NB Beaver Ruin Rd. LDV

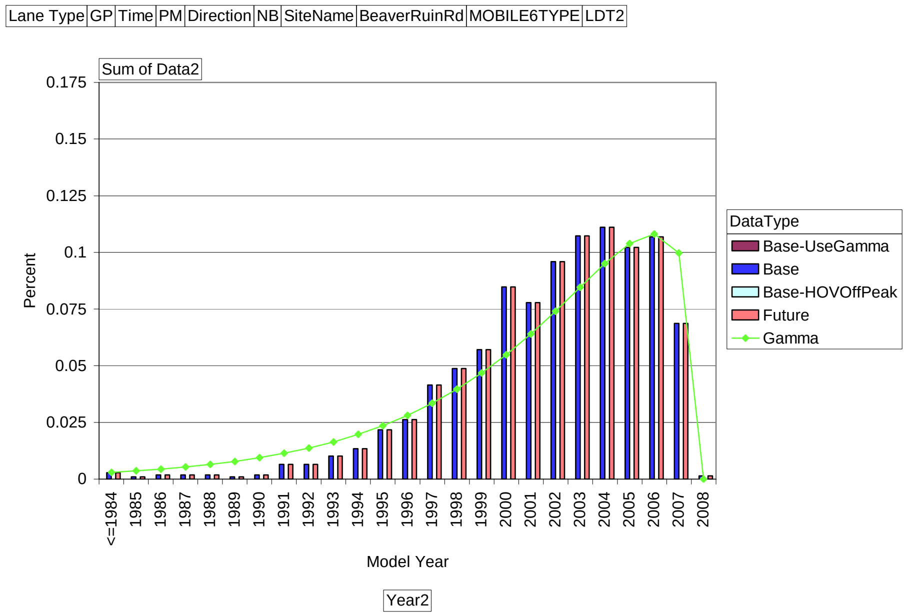

Figure C.59 Onroad Age Distribution for GP PM NB Beaver Ruin Rd. LDT2

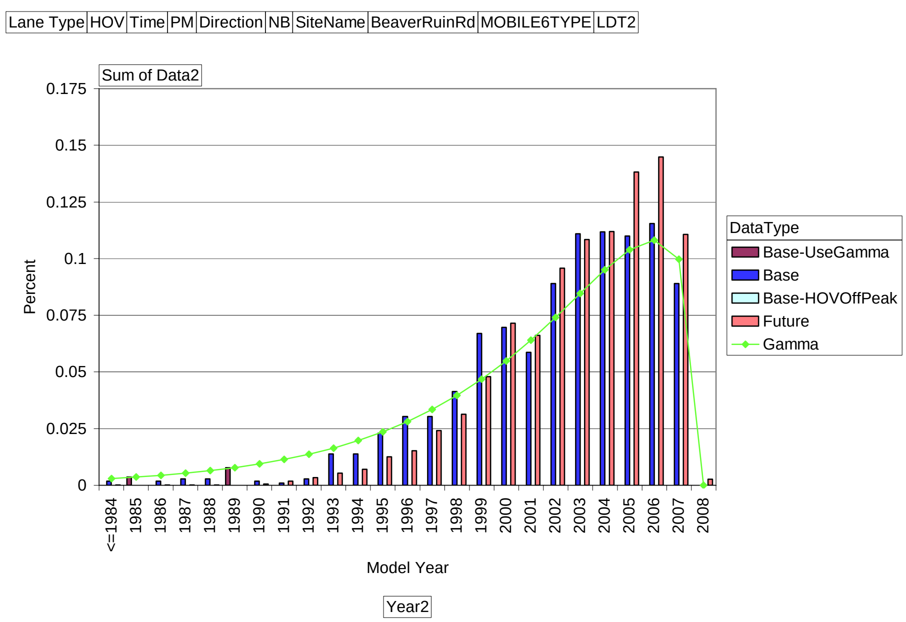

Figure C.60 Onroad Age Distribution for HOV PM NB Beaver Ruin Rd. LDT2

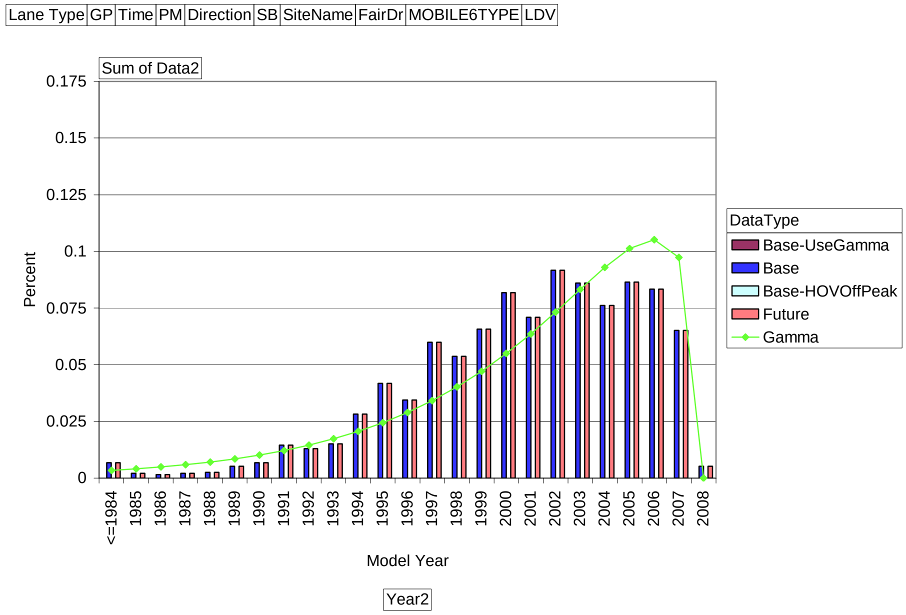

Figure C.61 Onroad Age Distribution for GP PM SB Fair Dr. LDV

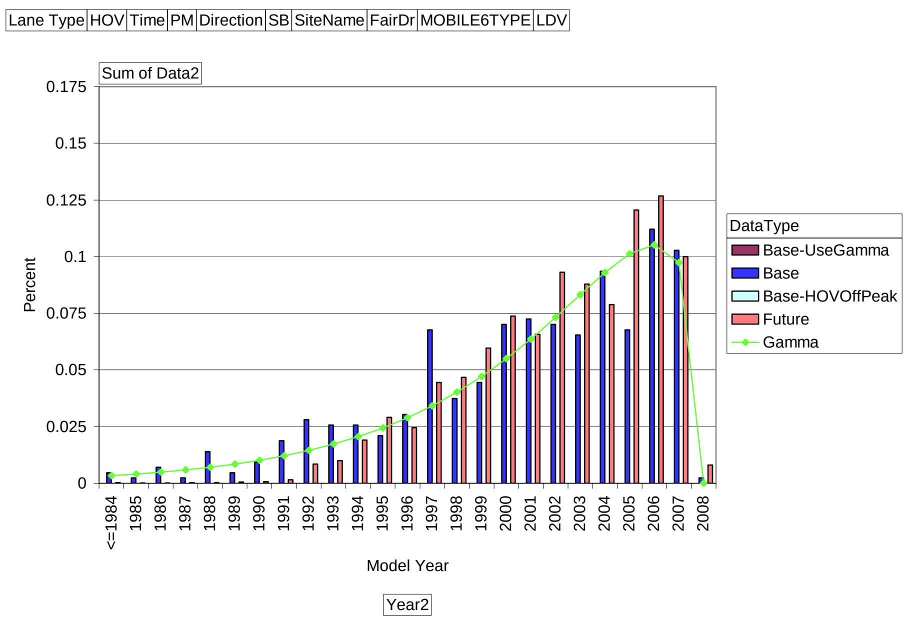

Figure C.62 Onroad Age Distribution for HOV PM SB Fair Dr. LDV

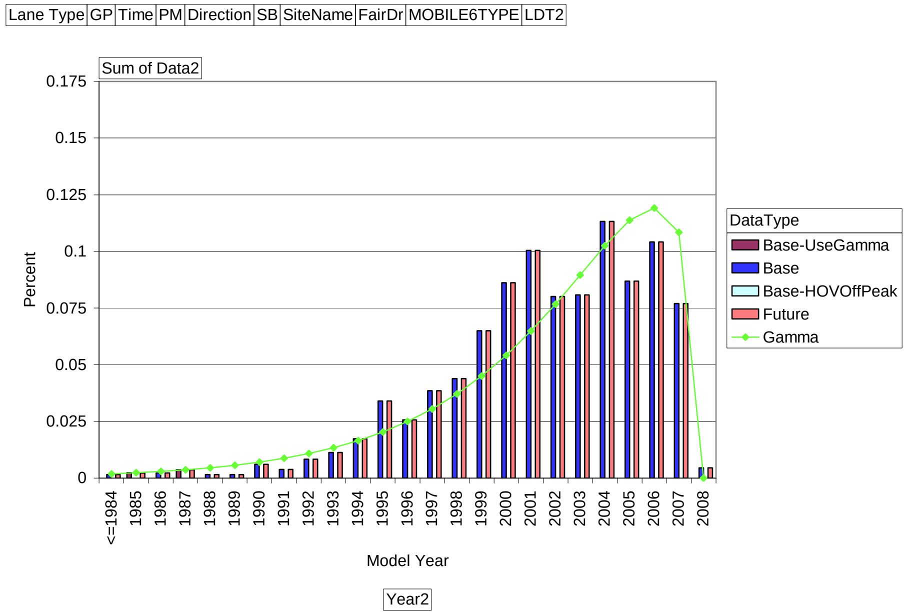

Figure C.63 Onroad Age Distribution for GP PM SB Fair Dr. LDT2

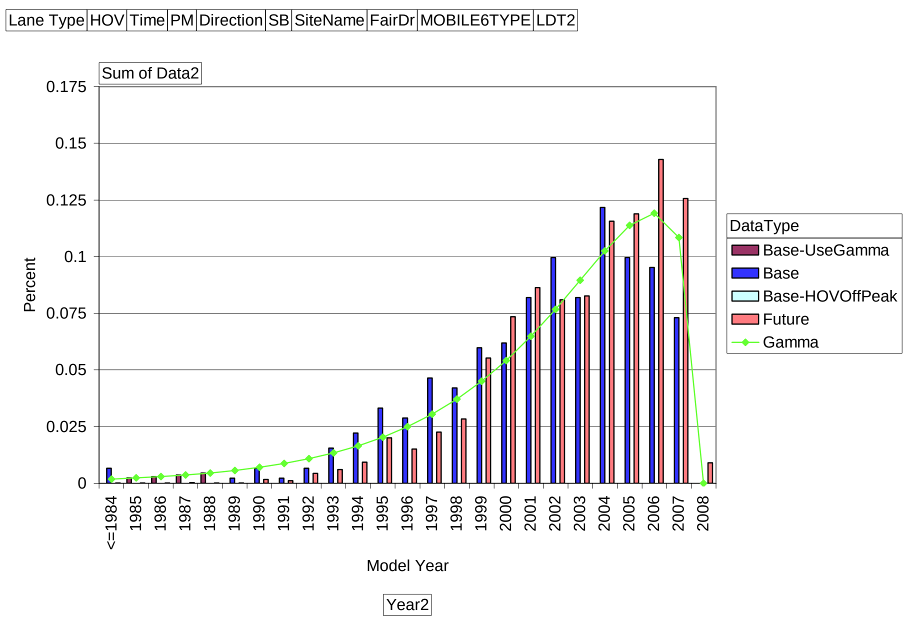

Figure C.64 Onroad Age Distribution for HOV PM SB Fair Dr. LDT2

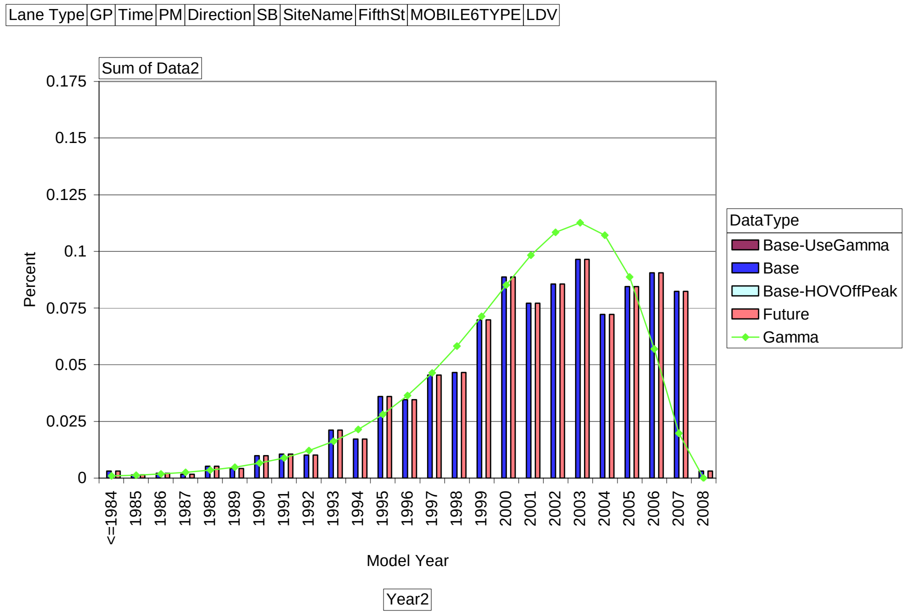

Figure C.65 Onroad Age Distribution for GP PM SB Fifth St. LDV

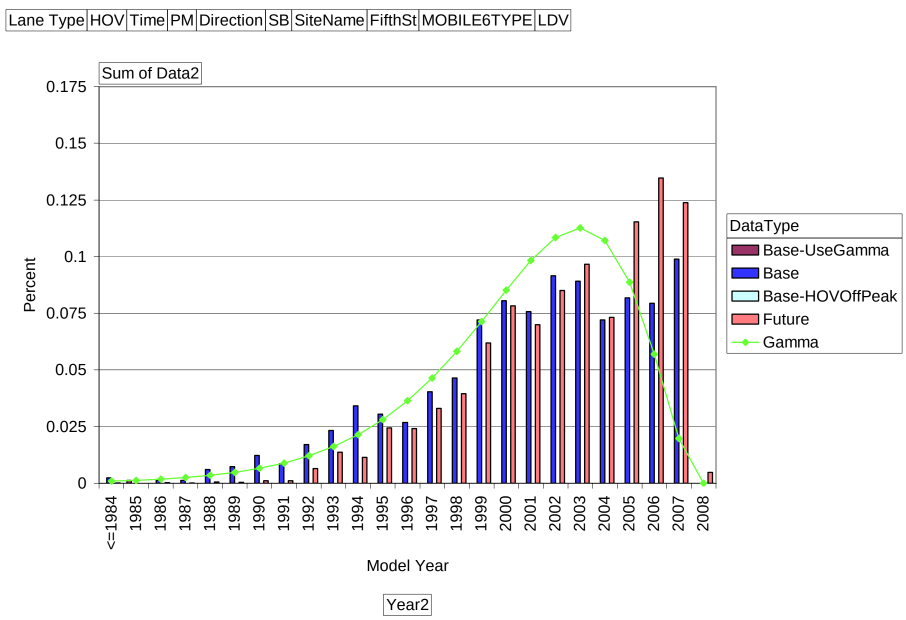

Figure C.66 Onroad Age Distribution for HOV PM SB Fifth St. LDV

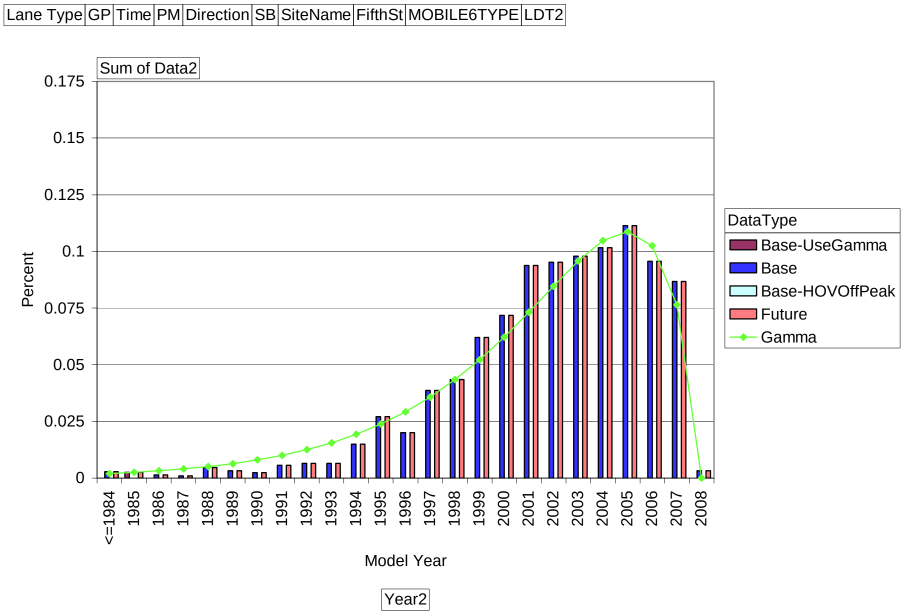

Figure C.67 Onroad Age Distribution for GP PM SB Fifth St. LDT2

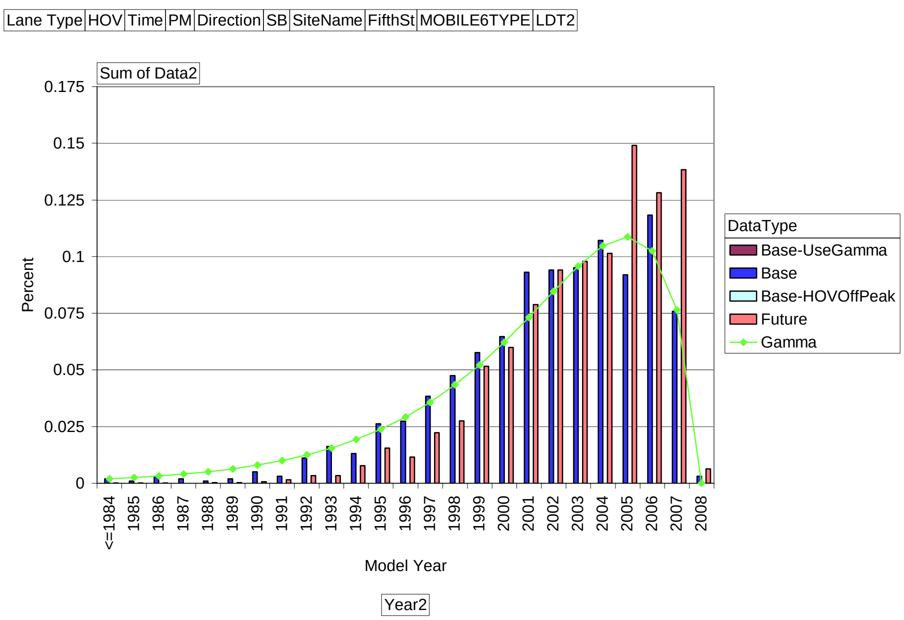

Figure C.68 Onroad Age Distribution for HOV PM SB Fifth St. LDT2

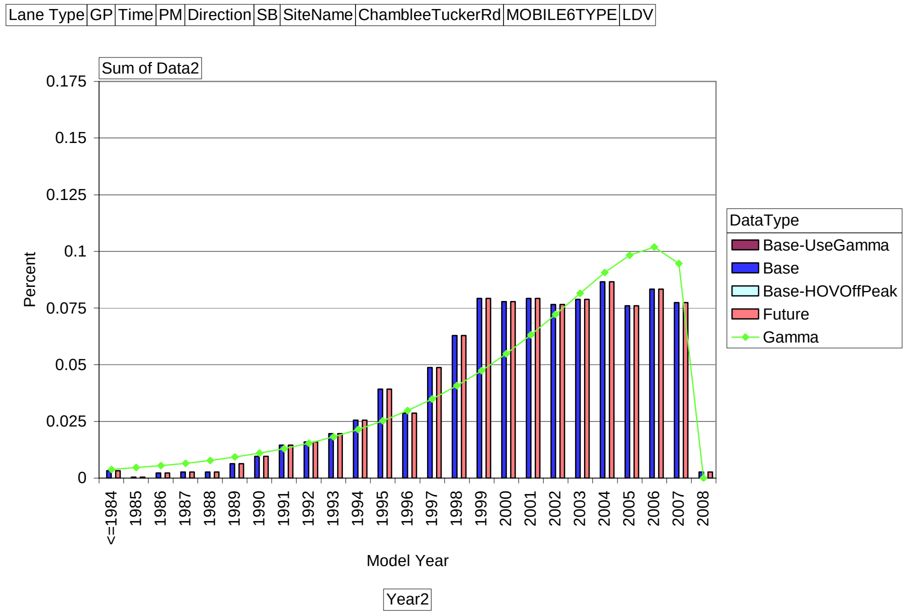

Figure C.69 Onroad Age Distribution for GP PM SB Chamblee Tucker Rd. LDV

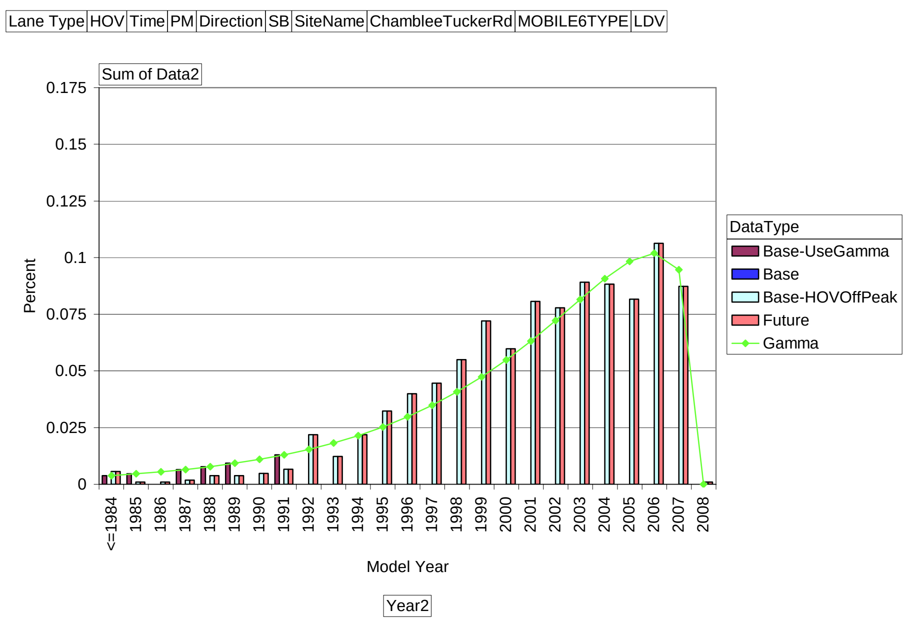

Figure C.70 Onroad Age Distribution for HOV PM SB Chamblee Tucker Rd. LDV

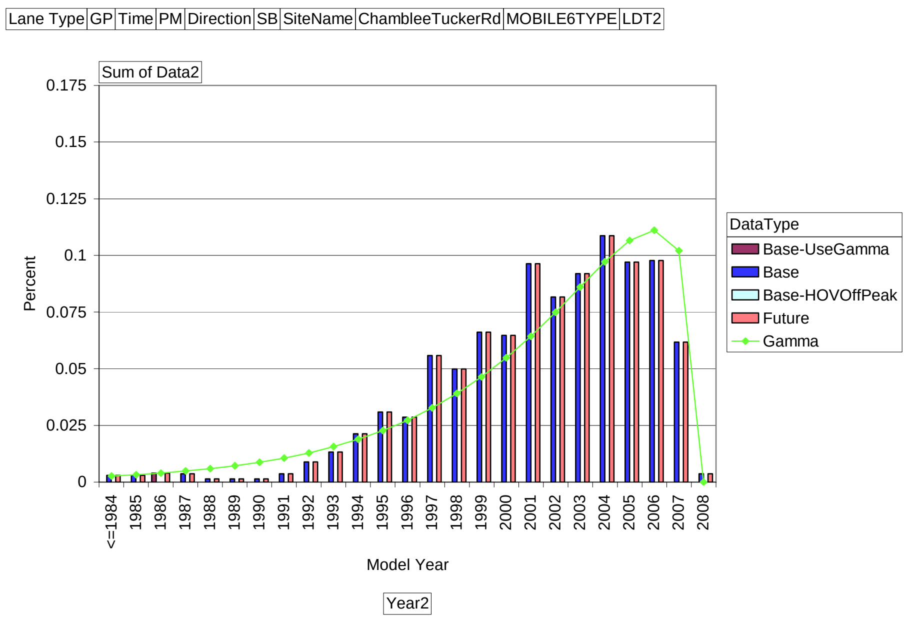

Figure C.71 Onroad Age Distribution for GP PM SB Chamblee Tucker Rd. LDT2

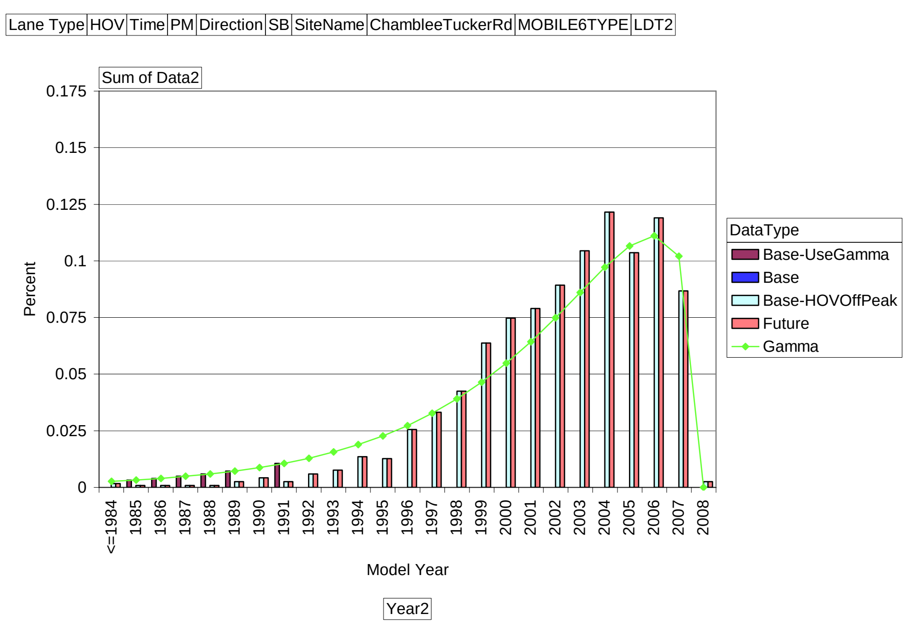

Figure C.72 Onroad Age Distribution for HOV PM SB Chamblee Tucker Rd. LDT2

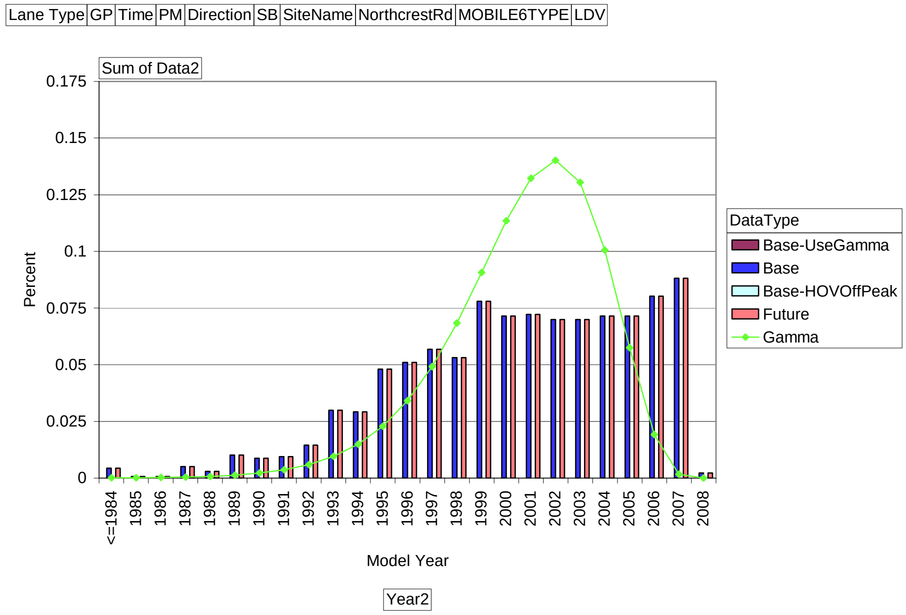

Figure C.73 Onroad Age Distribution for GP PM SB Northcrest Rd. LDV

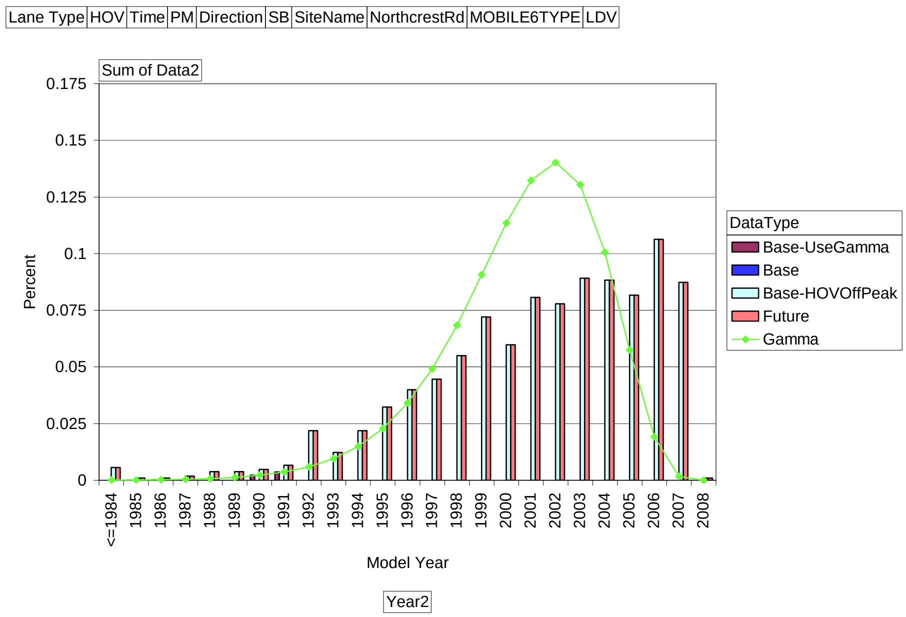

Figure C.74 Onroad Age Distribution for HOV PM SB Northcrest Rd. LDV

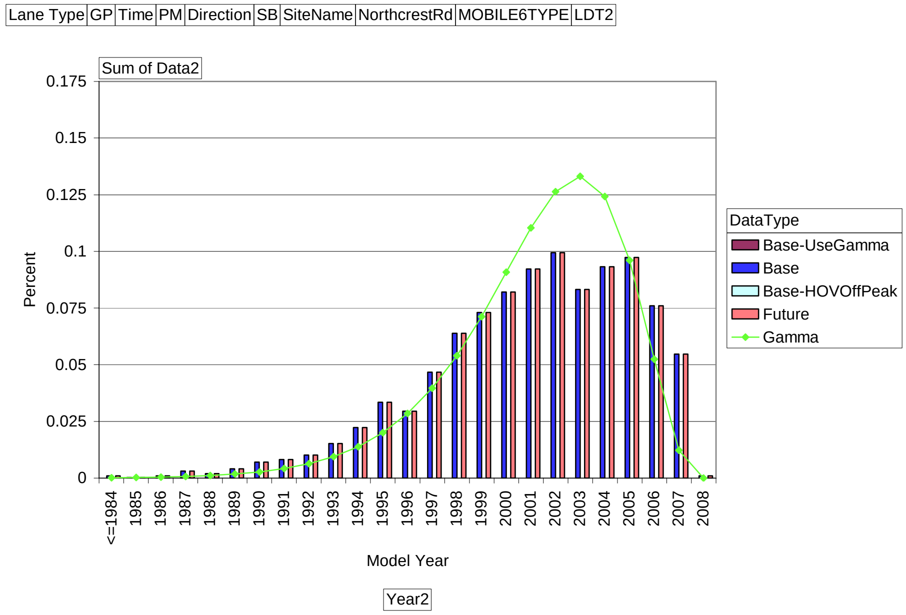

Figure C.75 Onroad Age Distribution for GP PM SB Northcrest Rd. LDT2

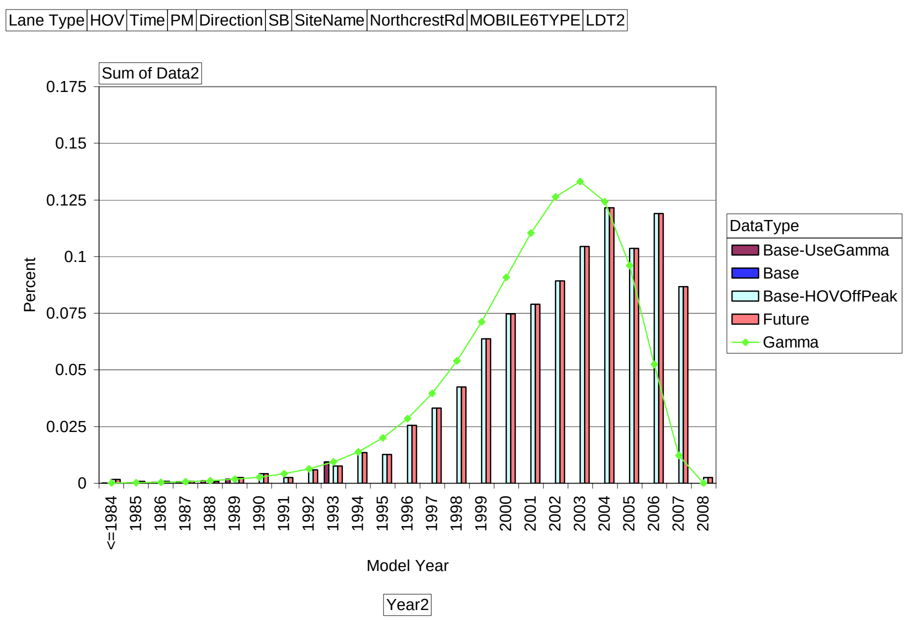

Figure C.76 Onroad Age Distribution for HOV PM SB Northcrest Rd. LDT2

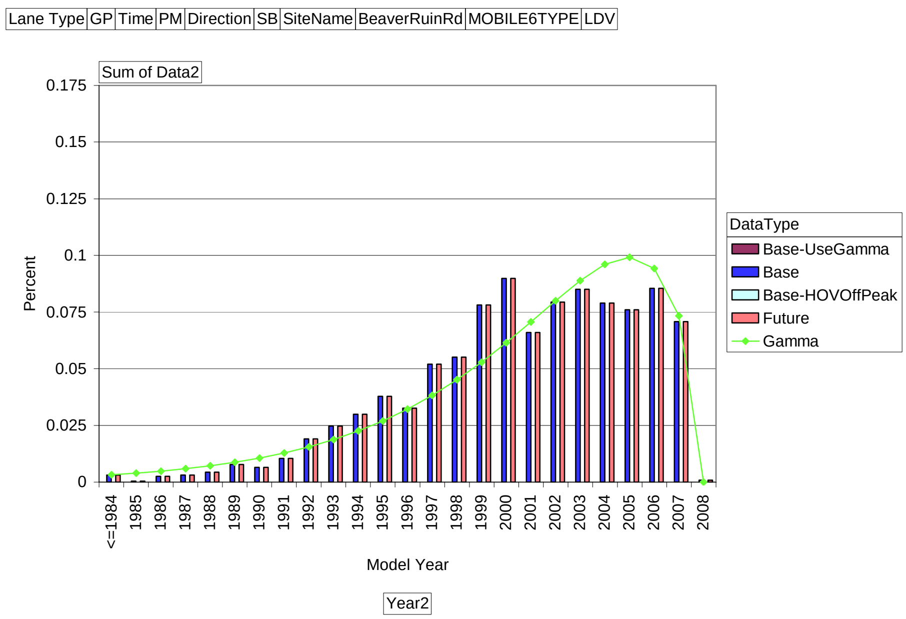

Figure C.77 Onroad Age Distribution for GP PM SB Beaver Ruin Rd. LDV

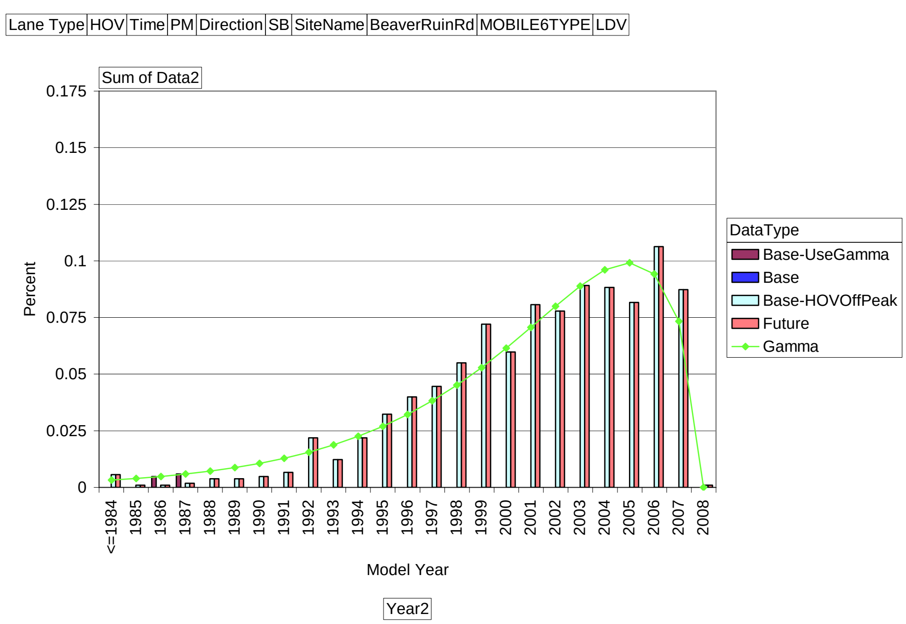

Figure C.78 Onroad Age Distribution for HOV PM SB Beaver Ruin Rd. LDV

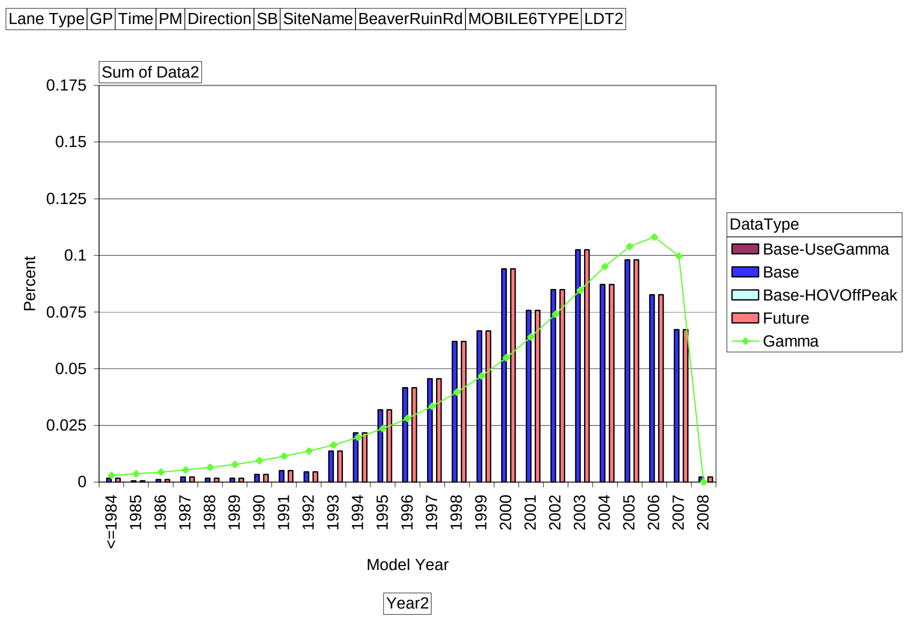

Figure C.79 Onroad Age Distribution for GP PM SB Beaver Ruin Rd. LDT2

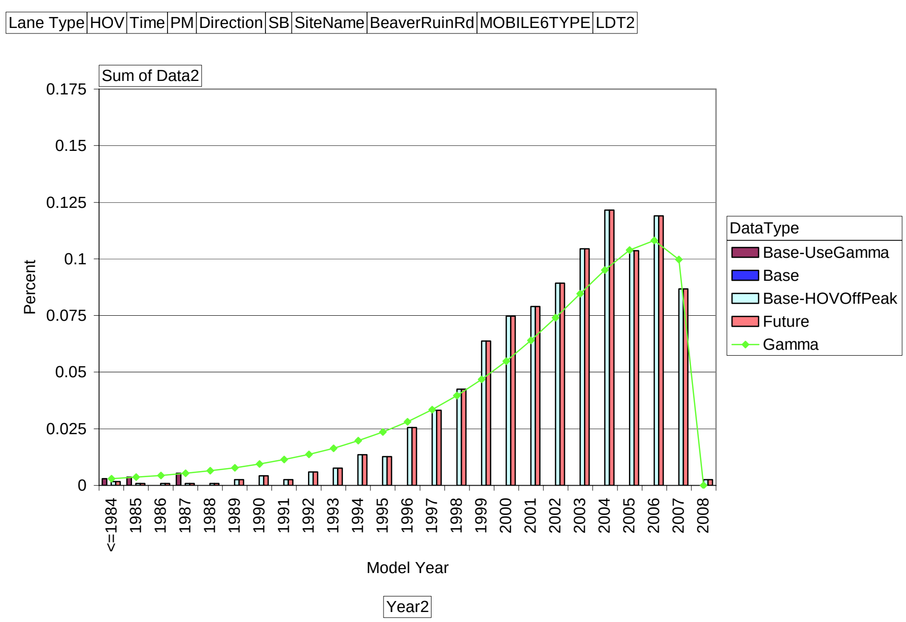

Figure C.80 Onroad Age Distribution for HOV PM SB Beaver Ruin Rd. LDT2

APPENDIX D

ONROAD VEHICLE CLASS DISTRIBUTION GRAPHS

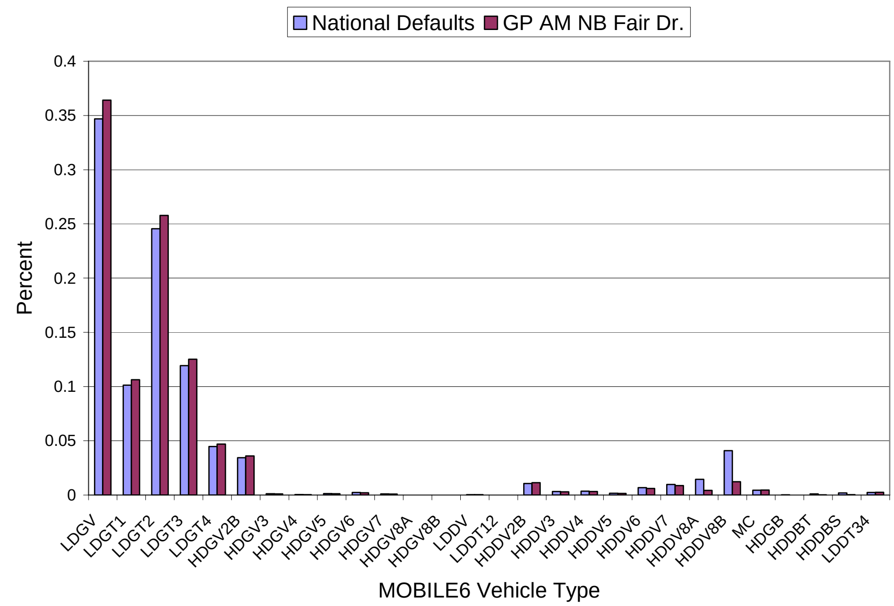

Figure D.1 Vehicle Class Distribution for GP AM NB Fair Dr.

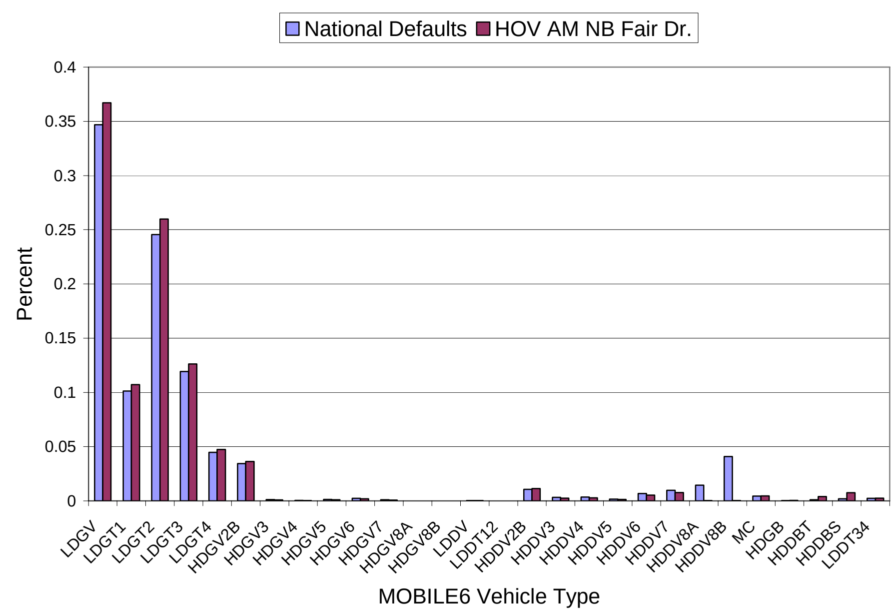

Figure D.2 Vehicle Class Distribution for HOV AM NB Fair Dr.

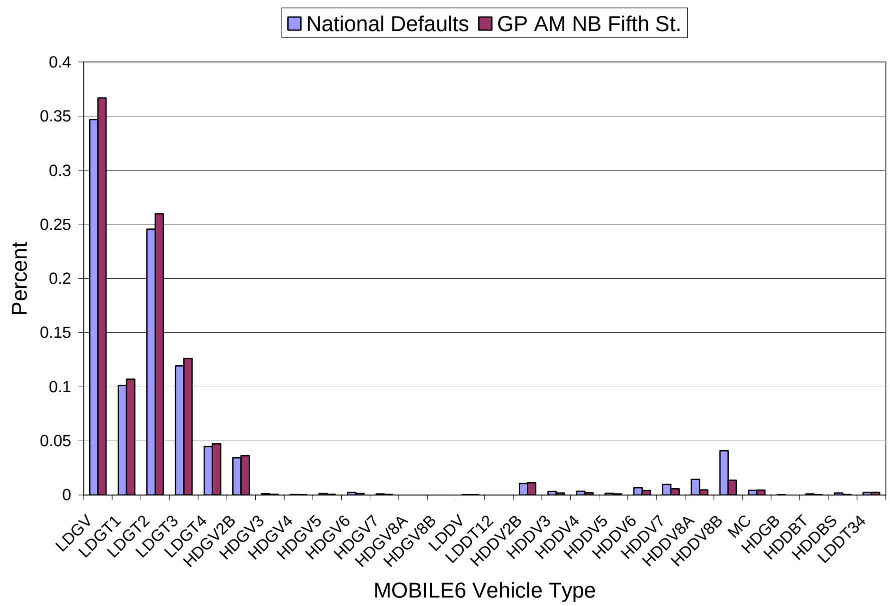

Figure D.3 Vehicle Class Distribution for GP AM NB Fifth St.

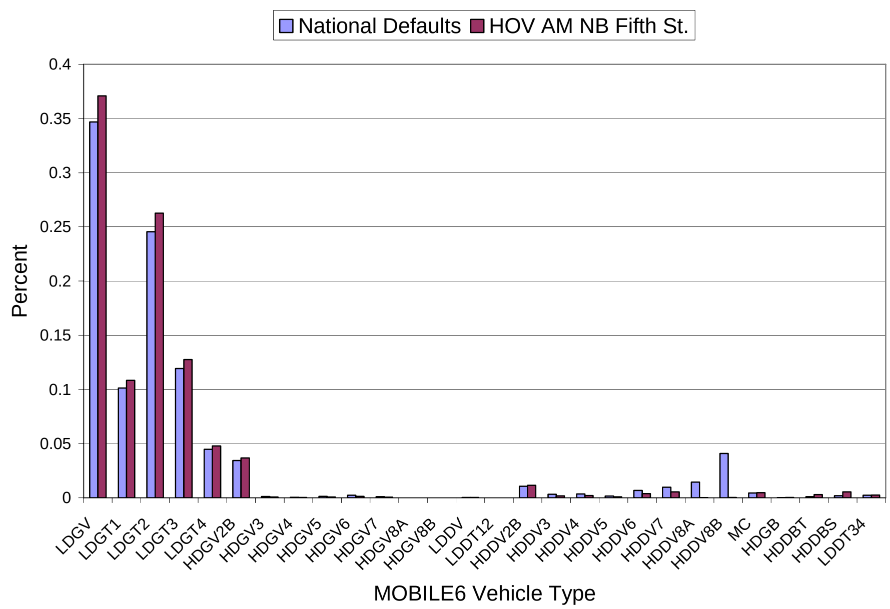

Figure D.4 Vehicle Class Distribution for HOV AM NB Fifth St.

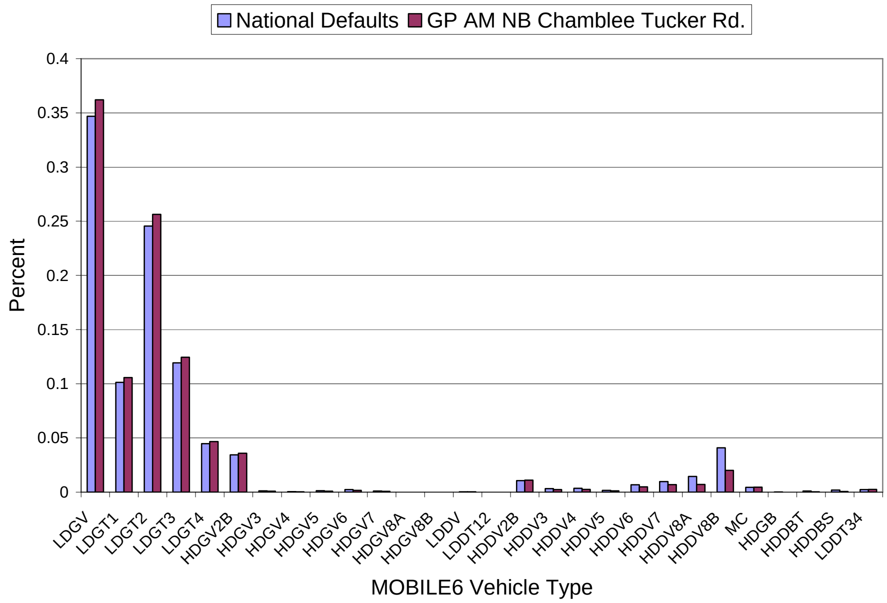

Figure D.5 Vehicle Class Distribution for GP AM NB Chamblee Tucker Rd.

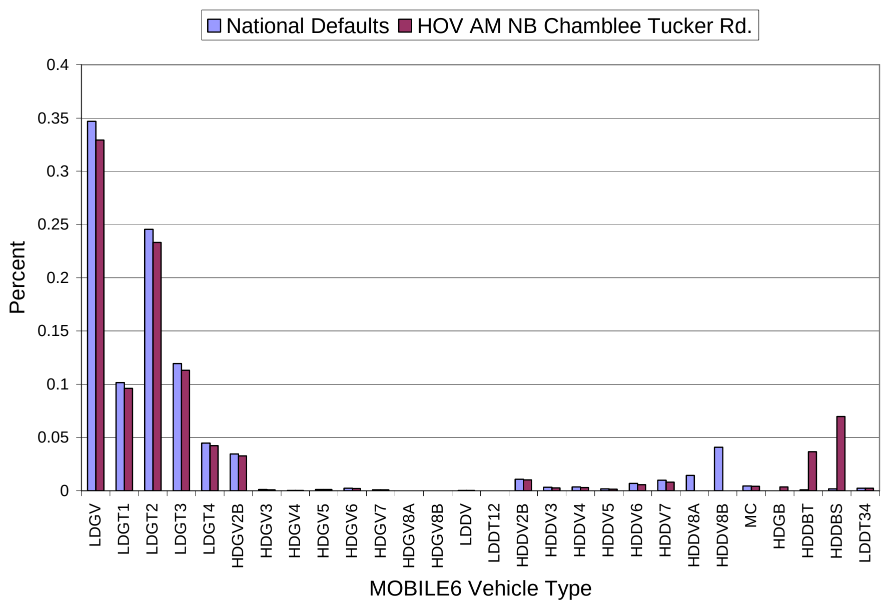

Figure D.6 Vehicle Class Distribution for HOV AM NB Chamblee Tucker Rd.

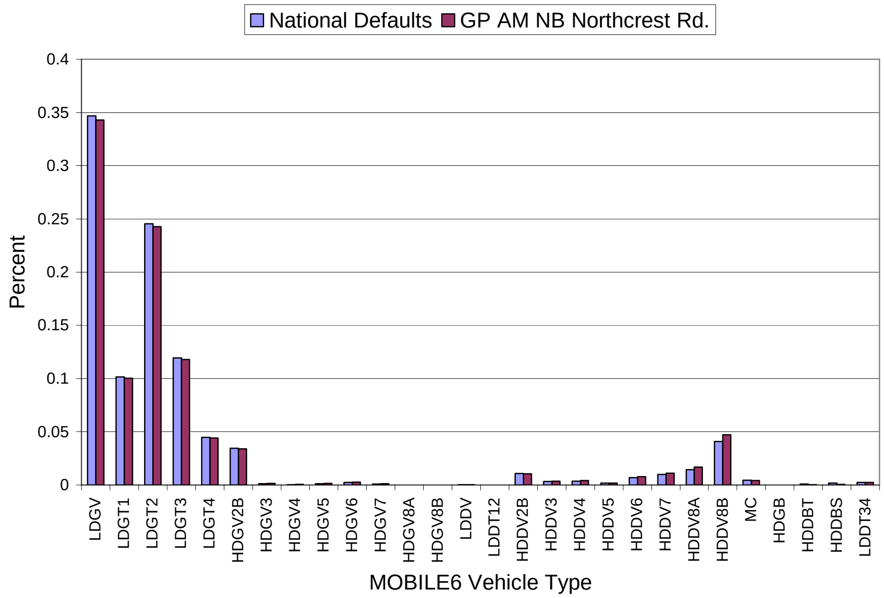

Figure D.7 Vehicle Class Distribution for GP AM NB Northcrest Rd.

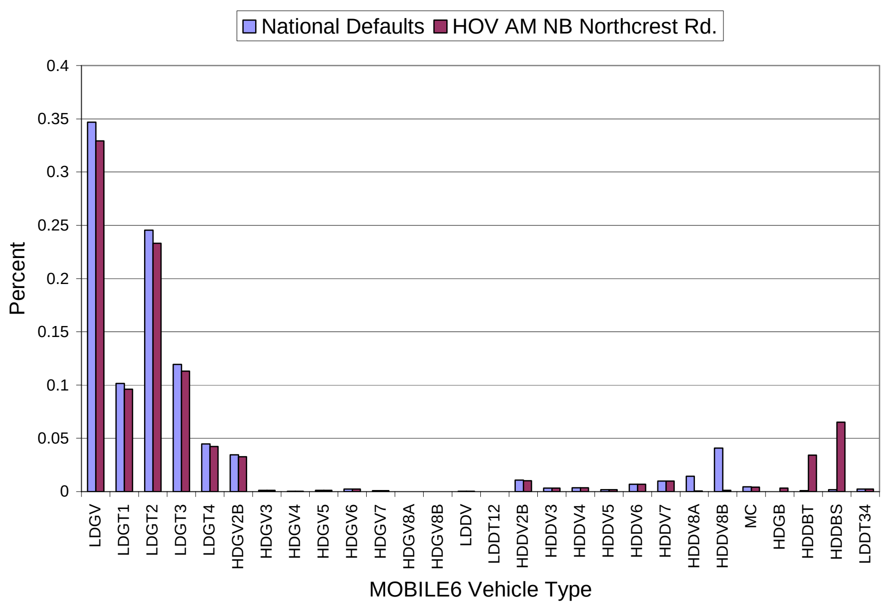

Figure D.8 Vehicle Class Distribution for HOV AM NB Northcrest Rd.

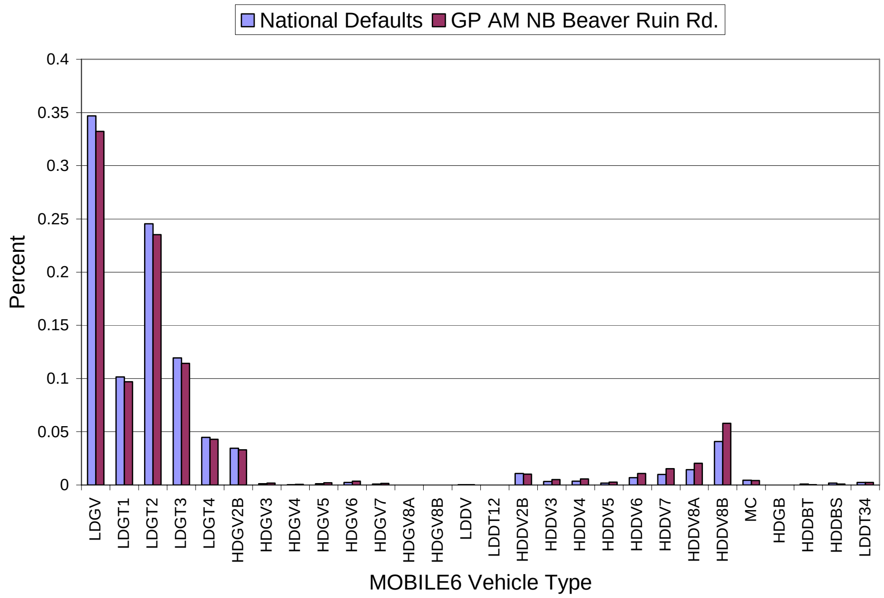

Figure D.9 Vehicle Class Distribution for GP AM NB Beaver Ruin Rd.

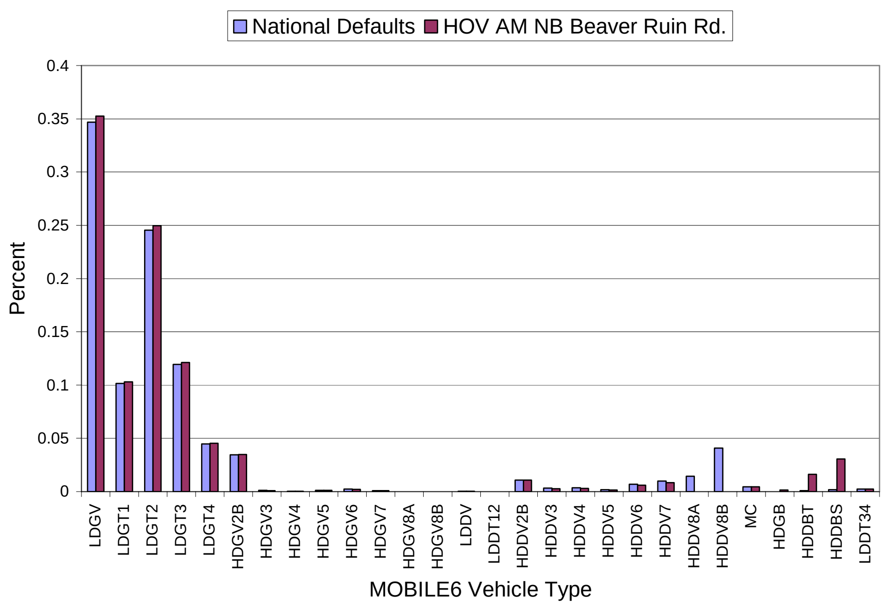

Figure D.10 Vehicle Class Distribution for HOV AM NB Beaver Ruin Rd.

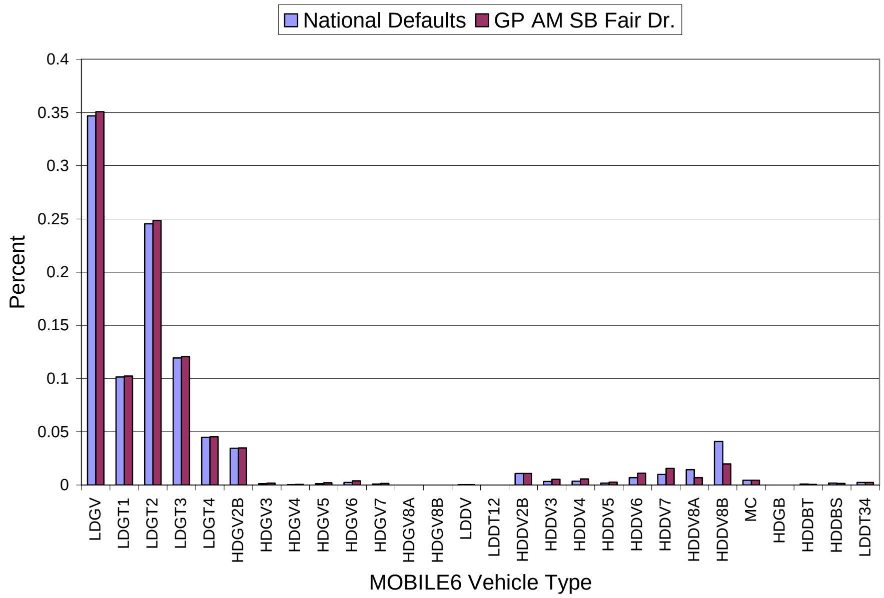

Figure D.11 Vehicle Class Distribution for GP AM SB Fair Dr.

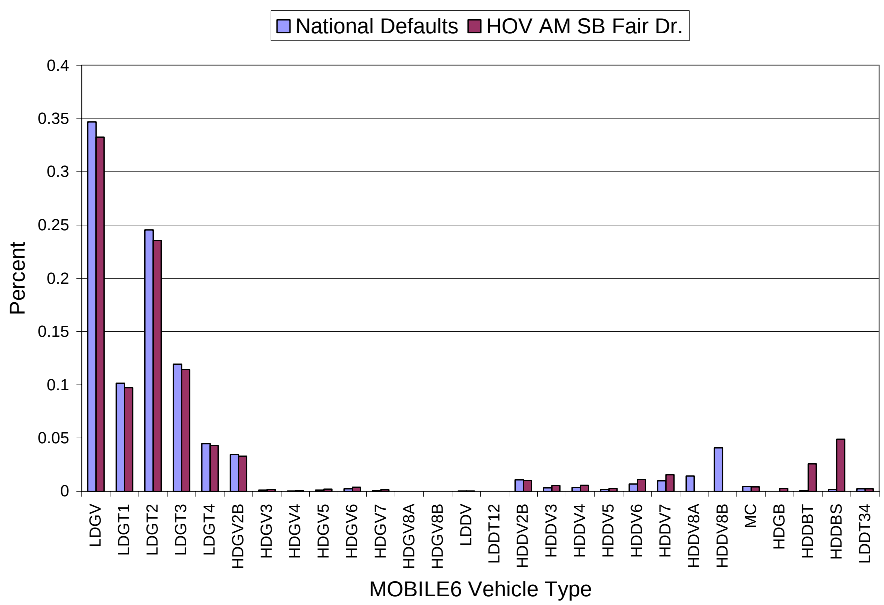

Figure D.12 Vehicle Class Distribution for HOV AM SB Fair Dr.

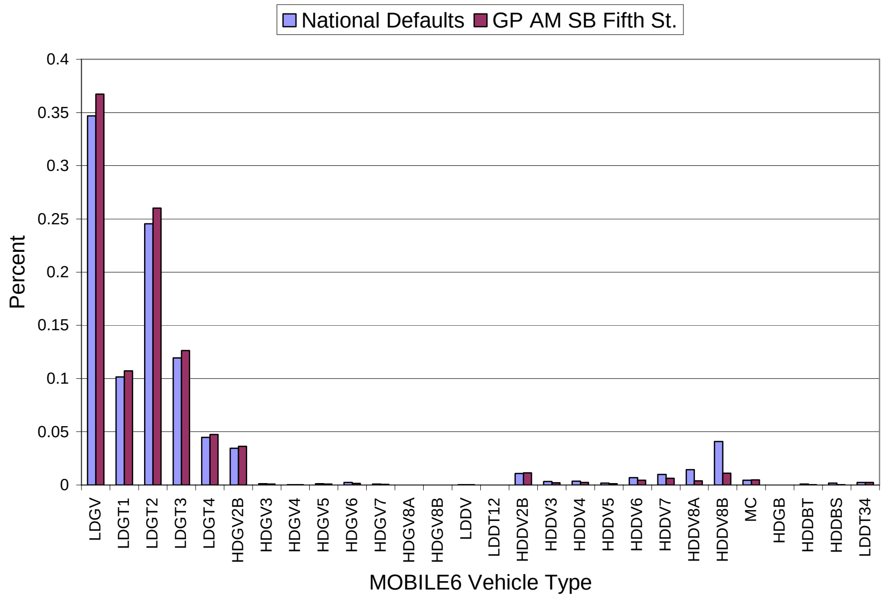

Figure D.13 Vehicle Class Distribution for GP AM SB Fifth St.

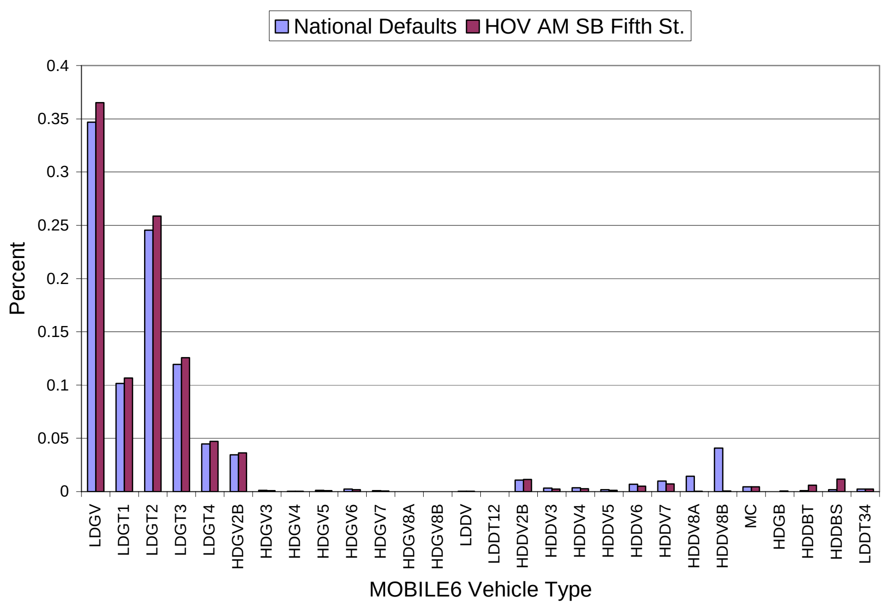

Figure D.14 Vehicle Class Distribution for HOV AM SB Fifth St.

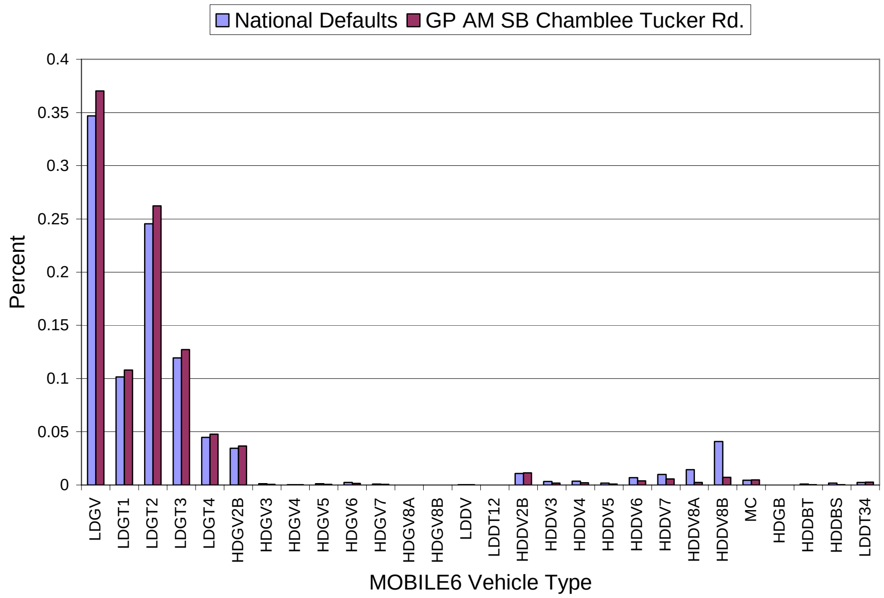

Figure D.15 Vehicle Class Distribution for GP AM SB Chamblee Tucker Rd.

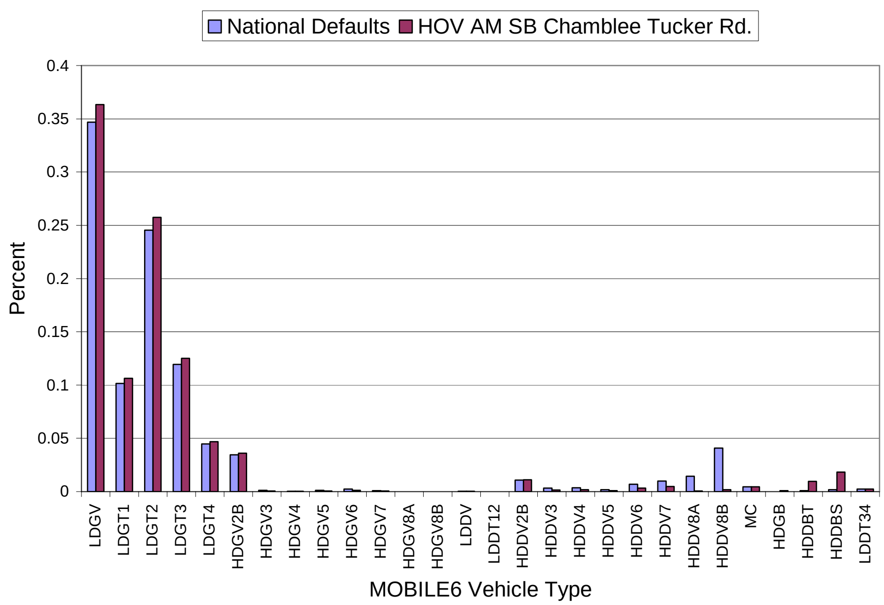

Figure D.16 Vehicle Class Distribution for HOV AM SB Chamblee Tucker Rd.

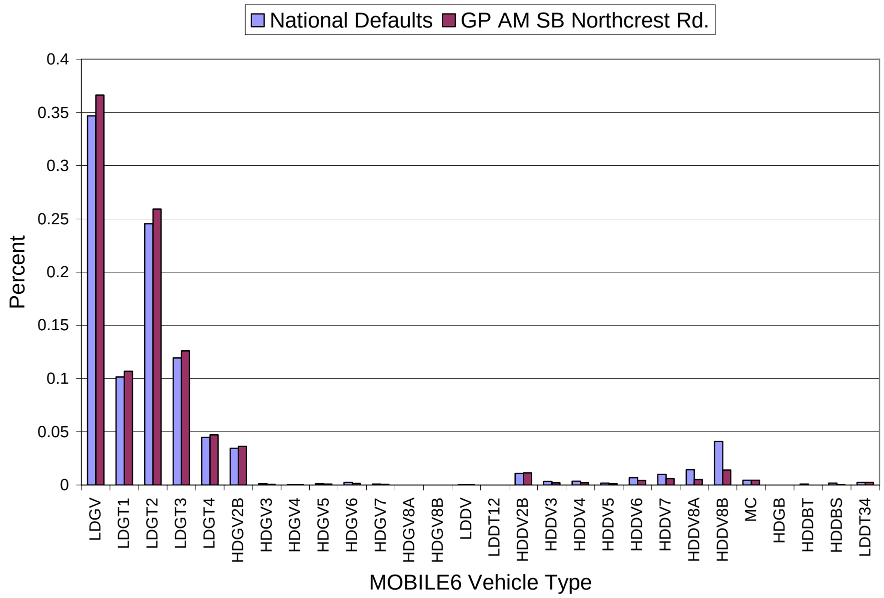

Figure D.17 Vehicle Class Distribution for GP AM SB Northcrest Rd.

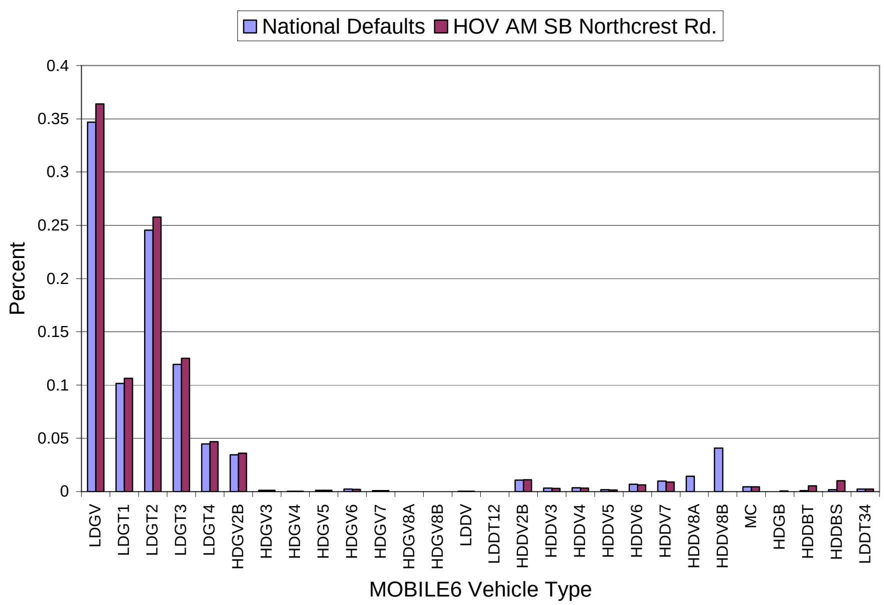

Figure D.18 Vehicle Class Distribution for HOV AM SB Northcrest Rd.

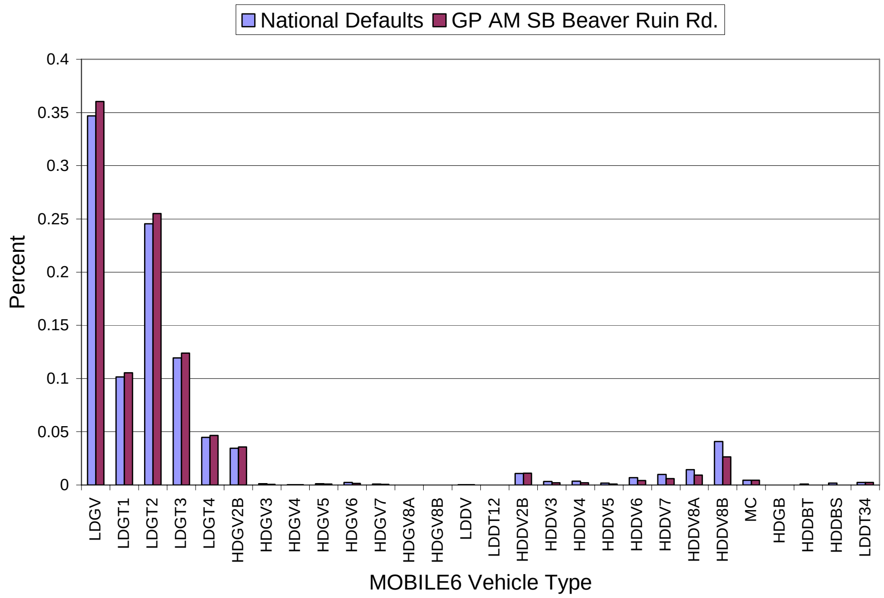

Figure D.19 Vehicle Class Distribution for GP AM SB Beaver Ruin Rd.

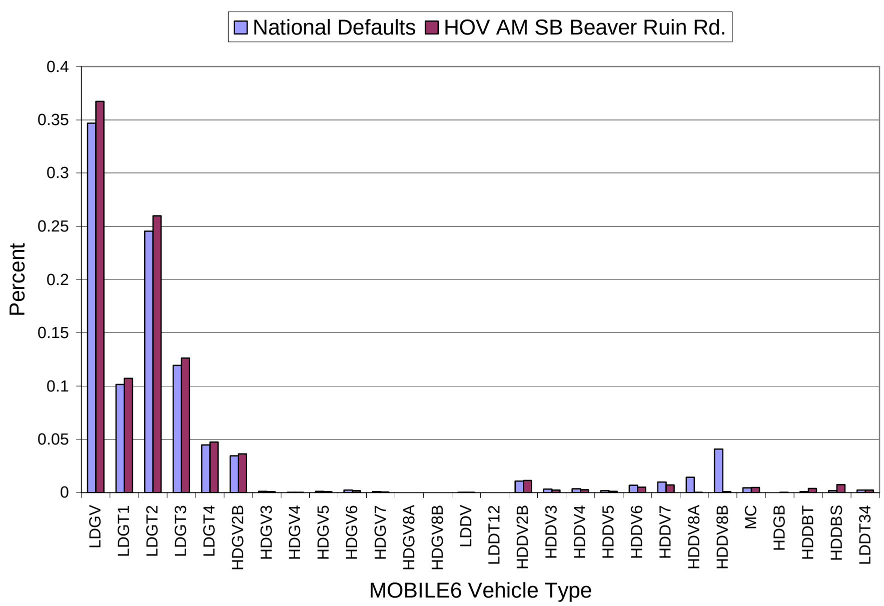

Figure D.20 Vehicle Class Distribution for HOV AM SB Beaver Ruin Rd.

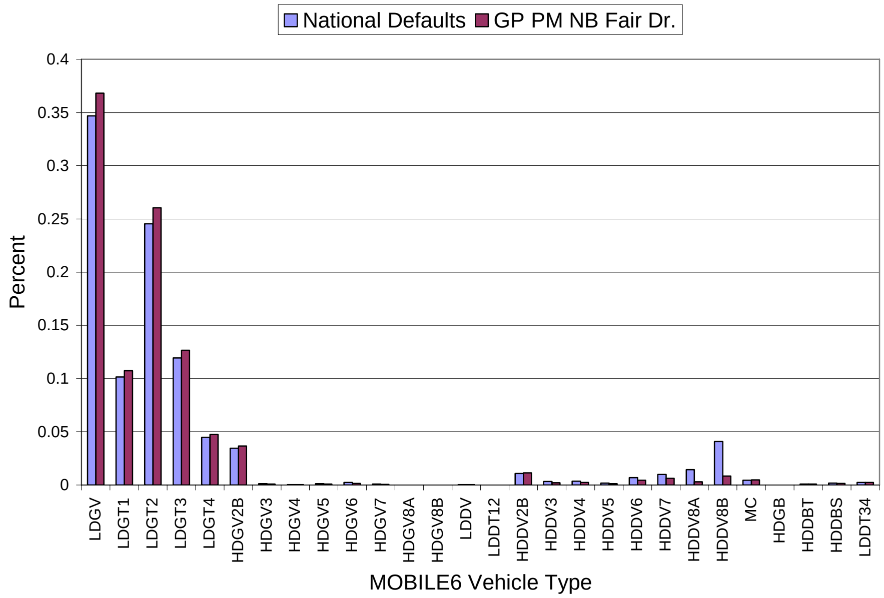

Figure D.21 Vehicle Class Distribution for GP PM NB Fair Dr.

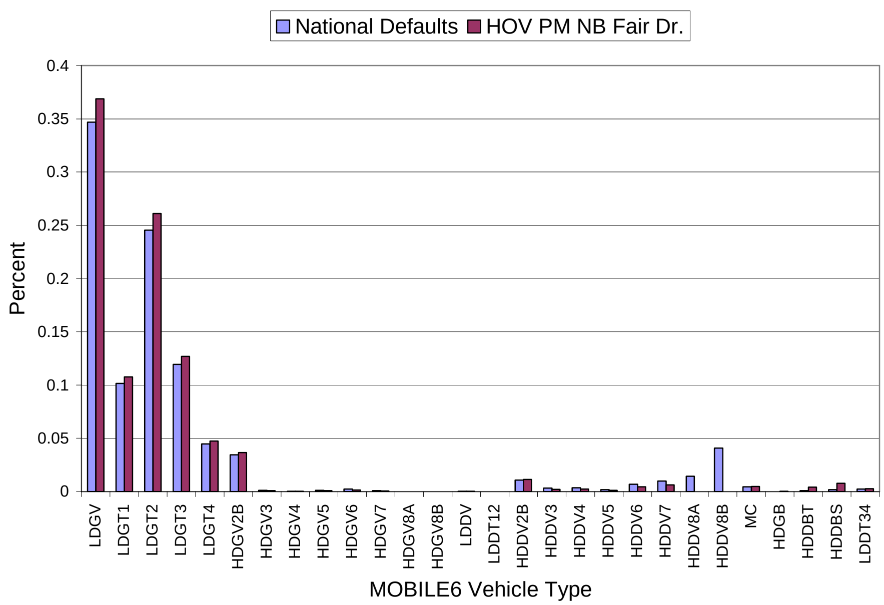

Figure D.22 Vehicle Class Distribution for HOV PM NB Fair Dr.

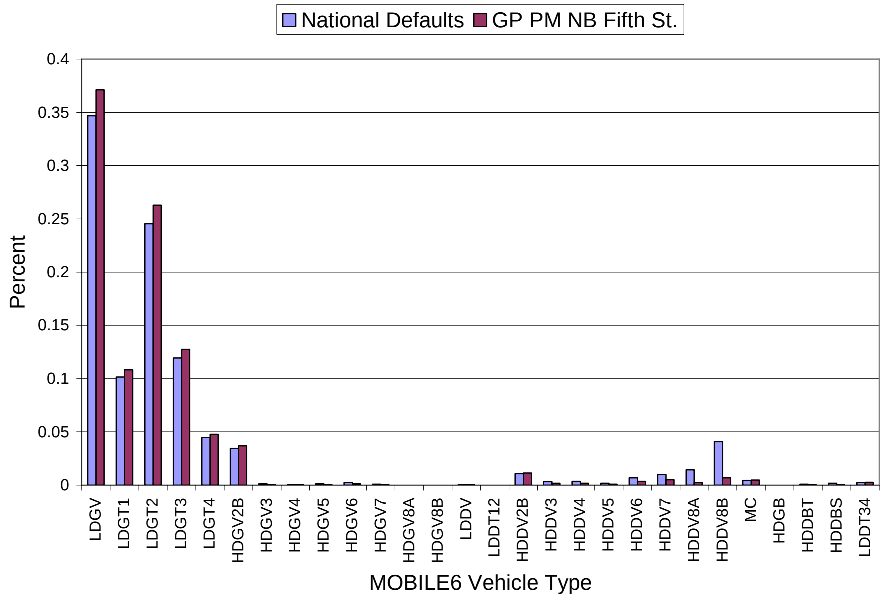

Figure D.23 Vehicle Class Distribution for GP PM NB Fifth St.

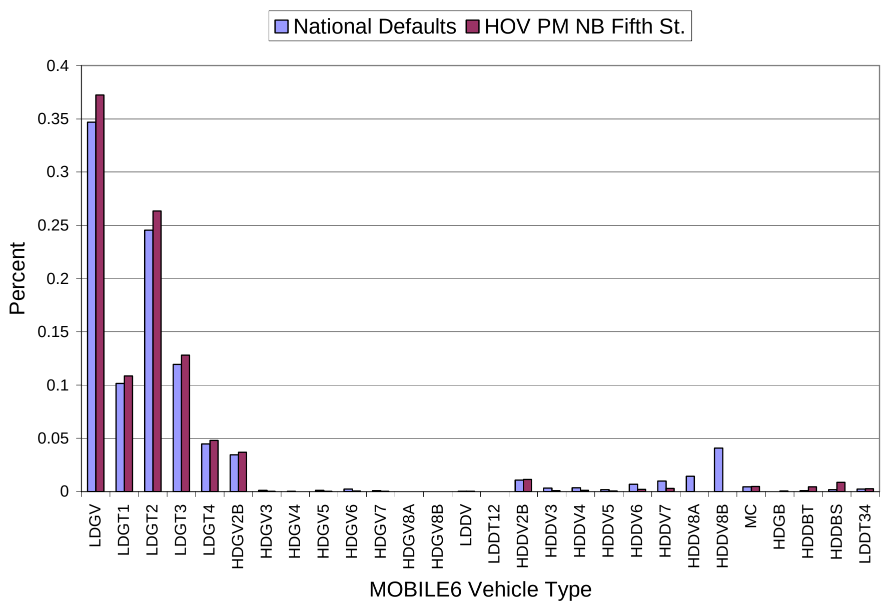

Figure D.24 Vehicle Class Distribution for HOV PM NB Fifth St.

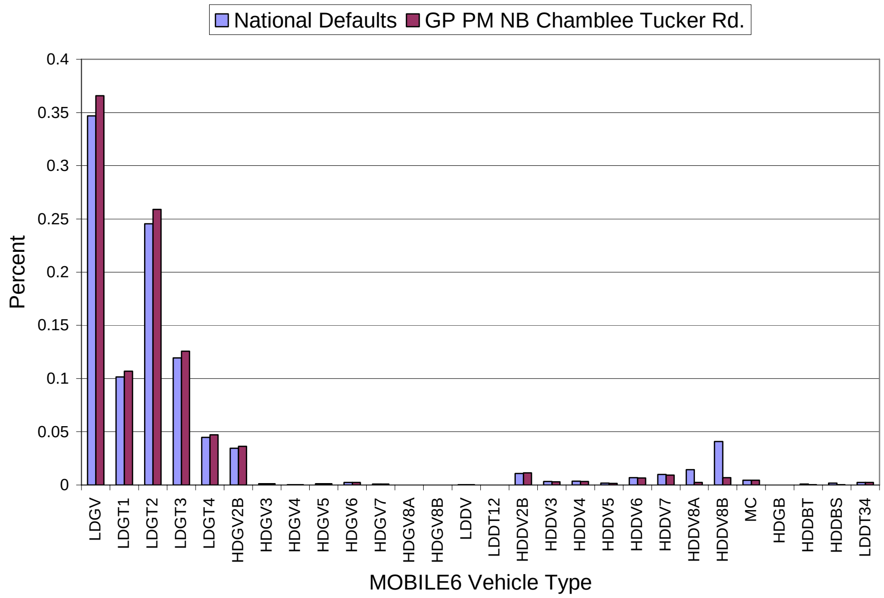

Figure D.25 Vehicle Class Distribution for GP PM NB Chamblee Tucker Rd.

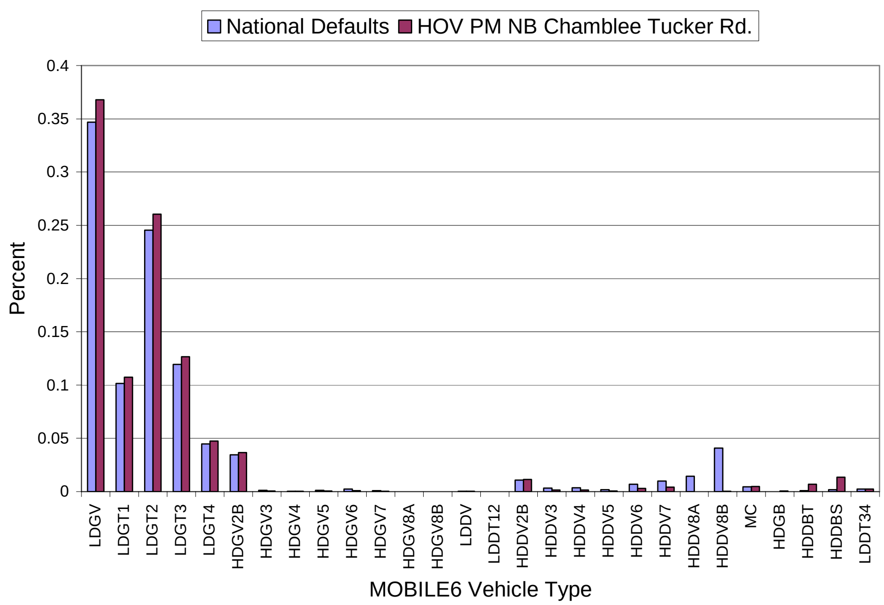

Figure D.26 Vehicle Class Distribution for HOV PM NB Chamblee Tucker Rd.

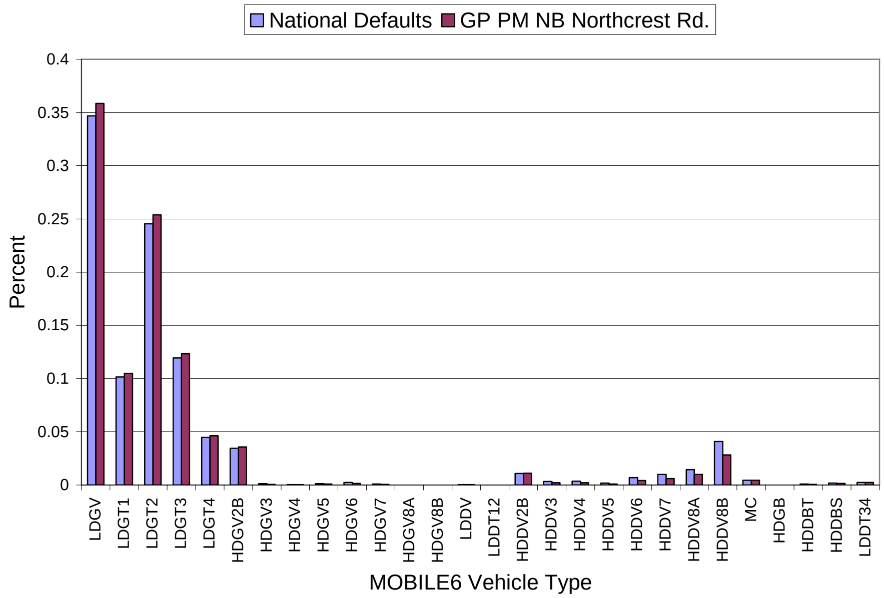

Figure D.27 Vehicle Class Distribution for GP PM NB Northcrest Rd.

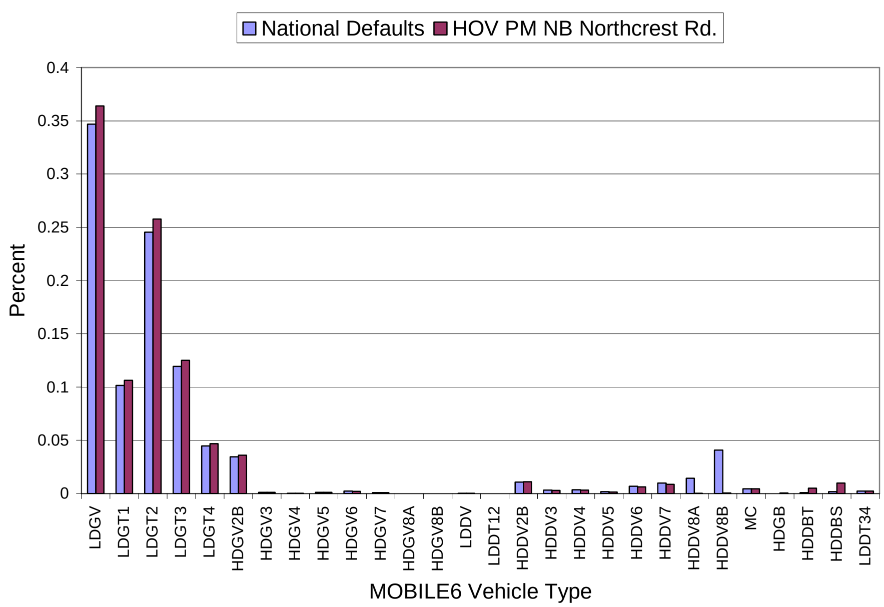

Figure D.28 Vehicle Class Distribution for HOV PM NB Northcrest Rd.

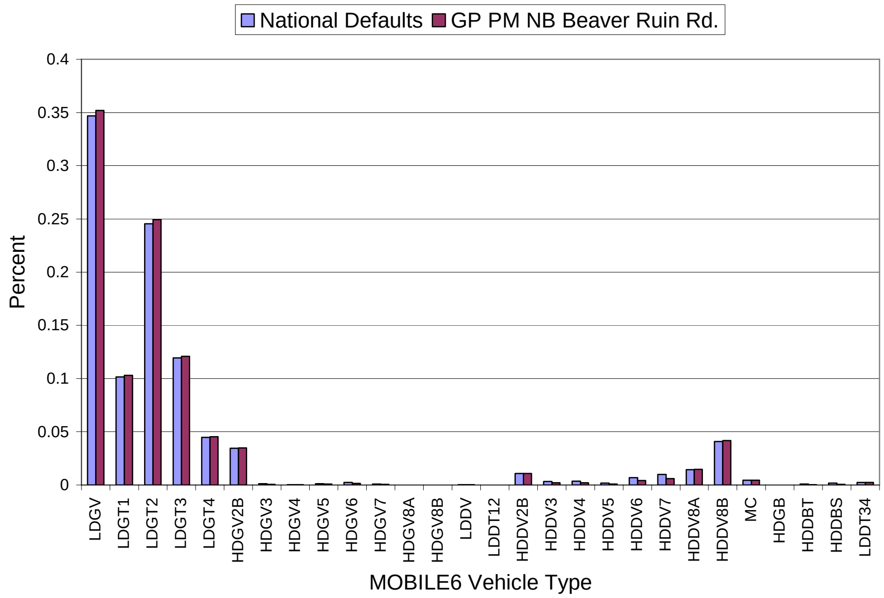

Figure D.29 Vehicle Class Distribution for GP PM NB Beaver Ruin Rd.

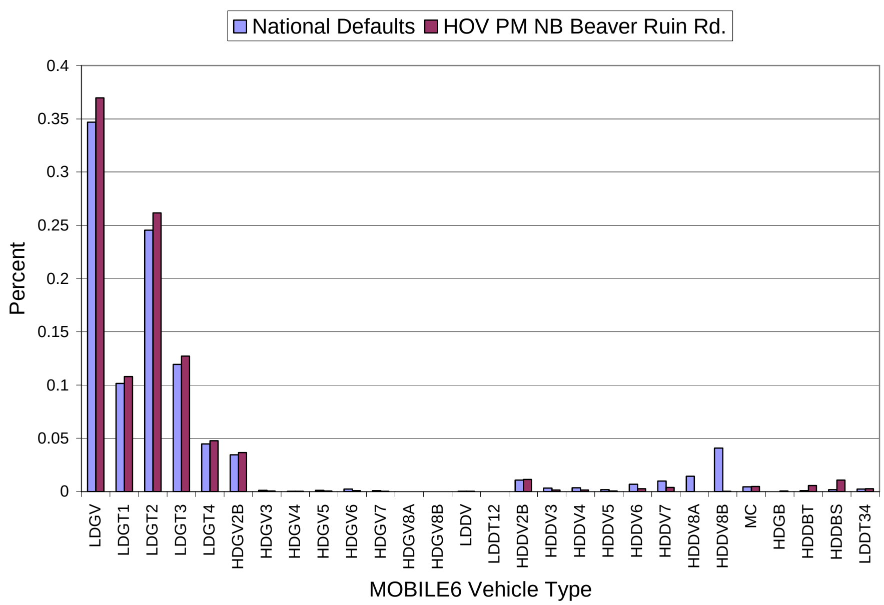

Figure D.30 Vehicle Class Distribution for HOV PM NB Beaver Ruin Rd.

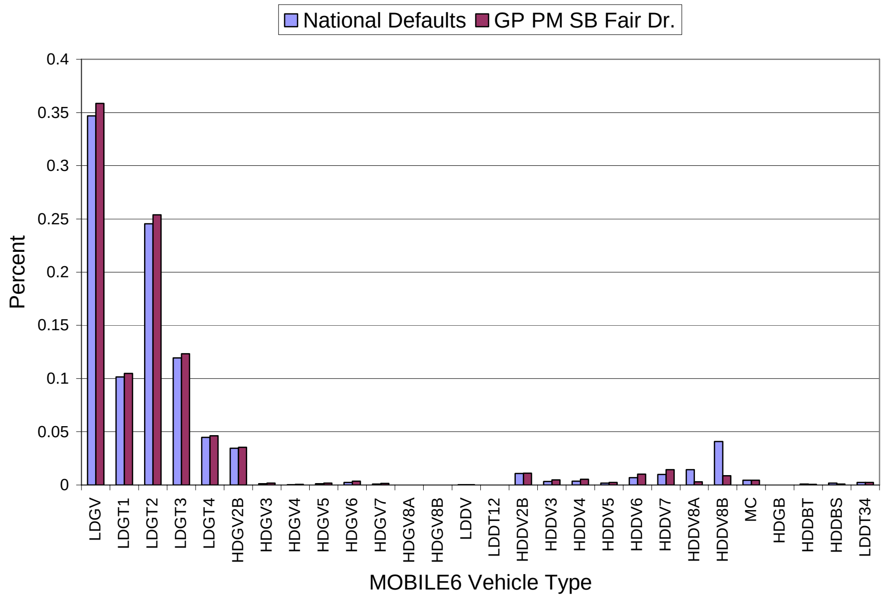

Figure D.31 Vehicle Class Distribution for GP PM SB Fair Dr.

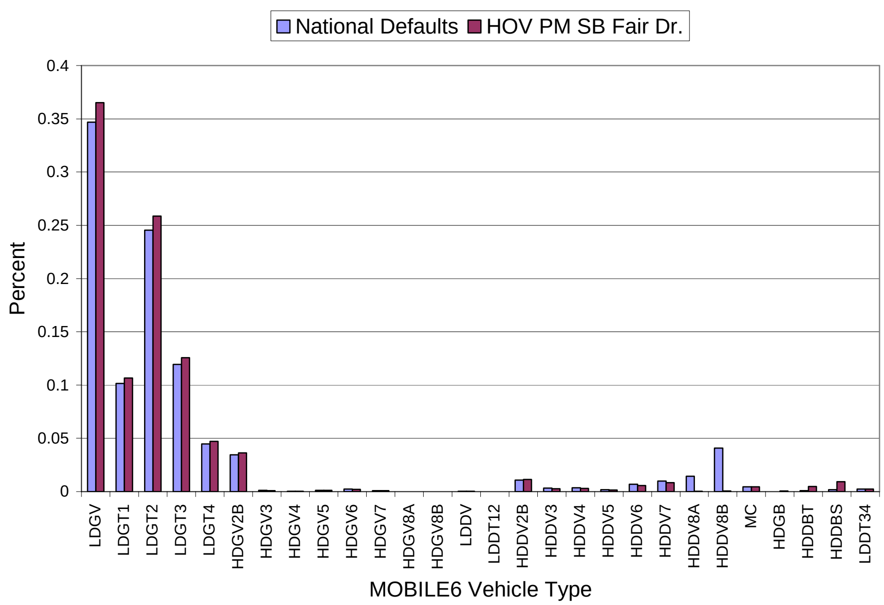

Figure D.32 Vehicle Class Distribution for HOV PM SB Fair Dr.

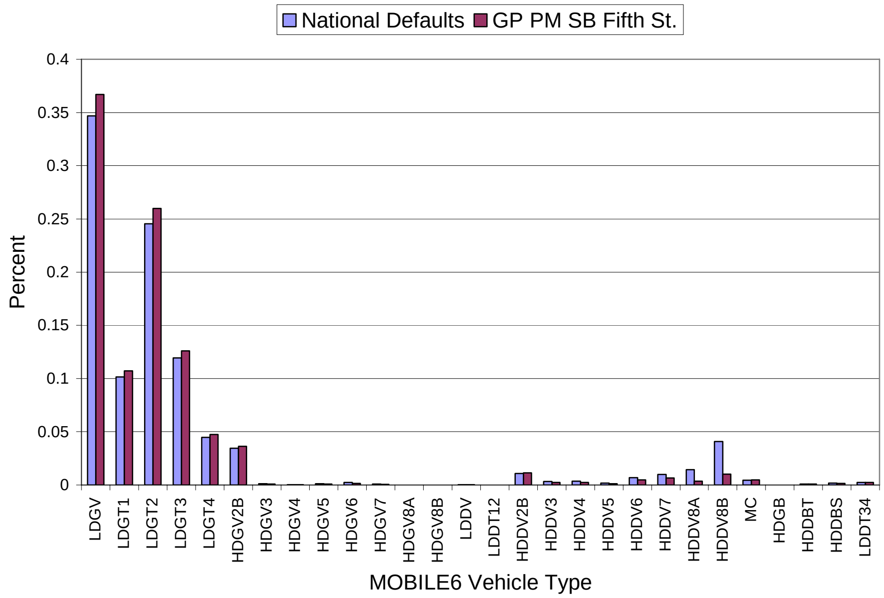

Figure D.33 Vehicle Class Distribution for GP PM SB Fifth St.

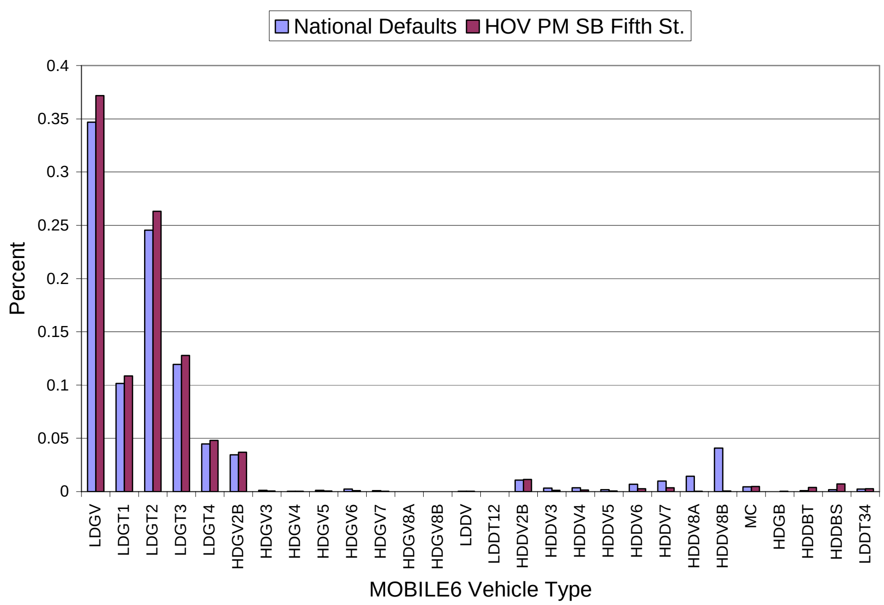

Figure D.34 Vehicle Class Distribution for HOV PM SB Fifth St.

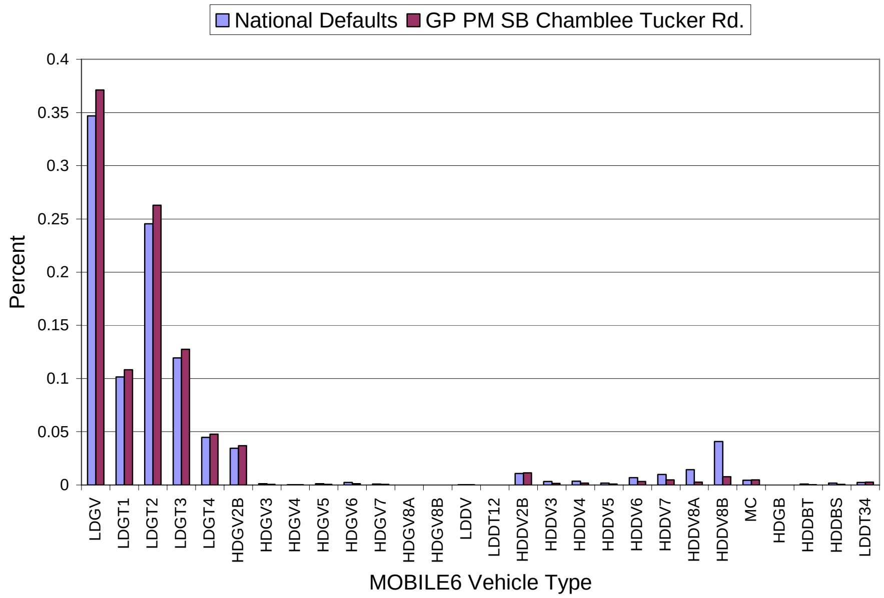

Figure D.35 Vehicle Class Distribution for GP PM SB Chamblee Tucker Rd.

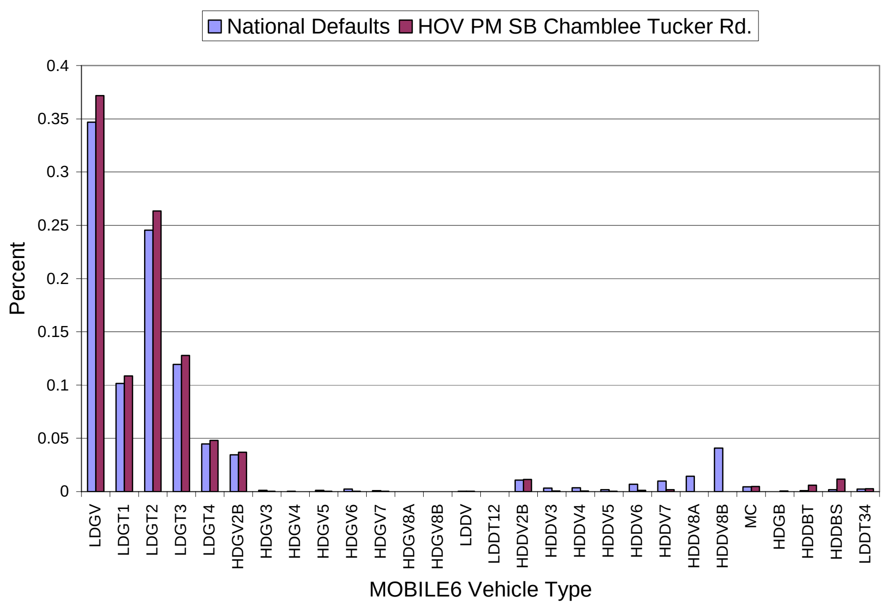

Figure D.36 Vehicle Class Distribution for HOV PM SB Chamblee Tucker Rd.

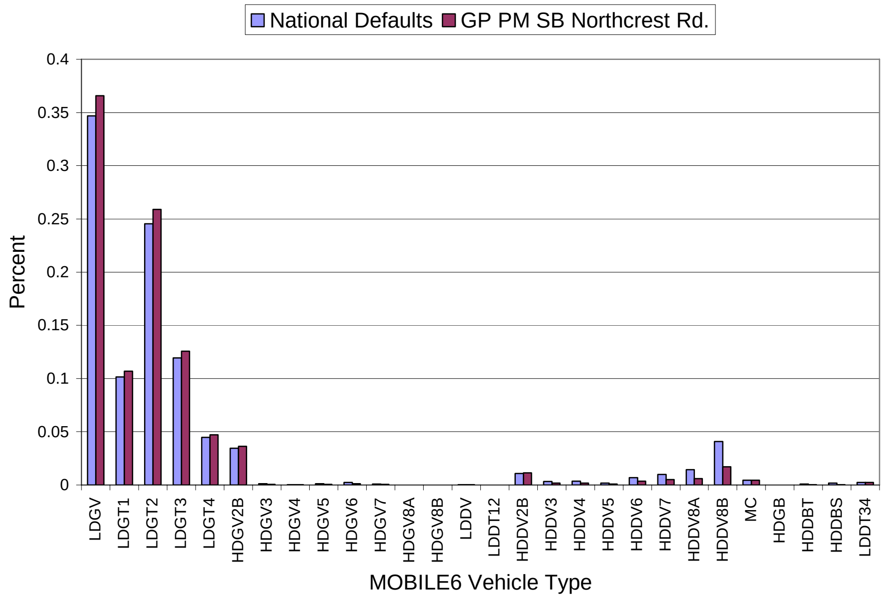

Figure D.37 Vehicle Class Distribution for GP PM SB Northcrest Rd.

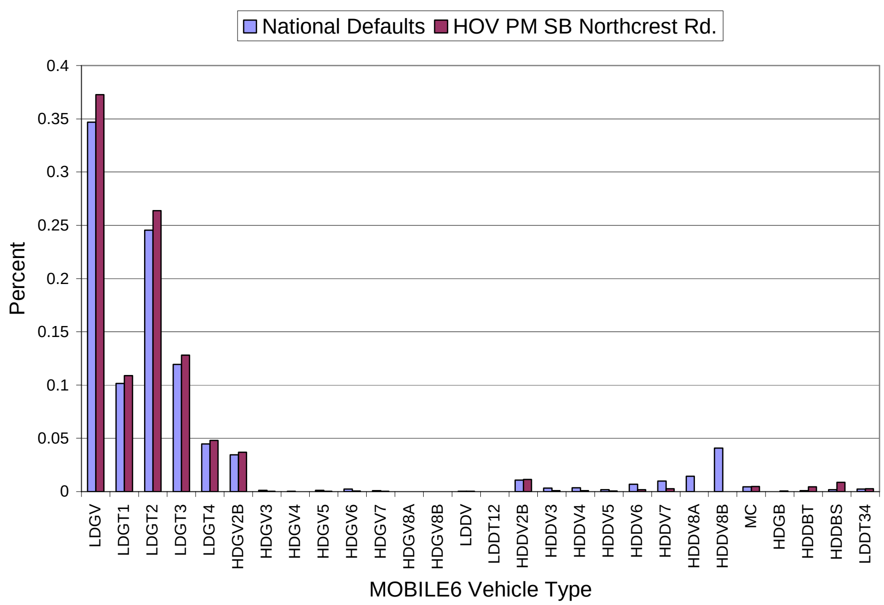

Figure D.38 Vehicle Class Distribution for HOV PM SB Northcrest Rd.

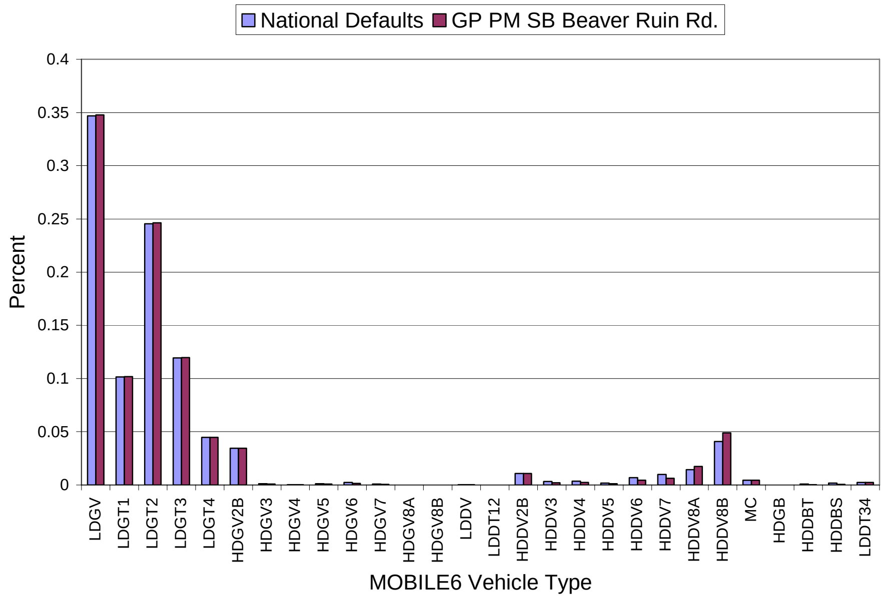

Figure D.39 Vehicle Class Distribution for GP PM SB Beaver Ruin Rd.

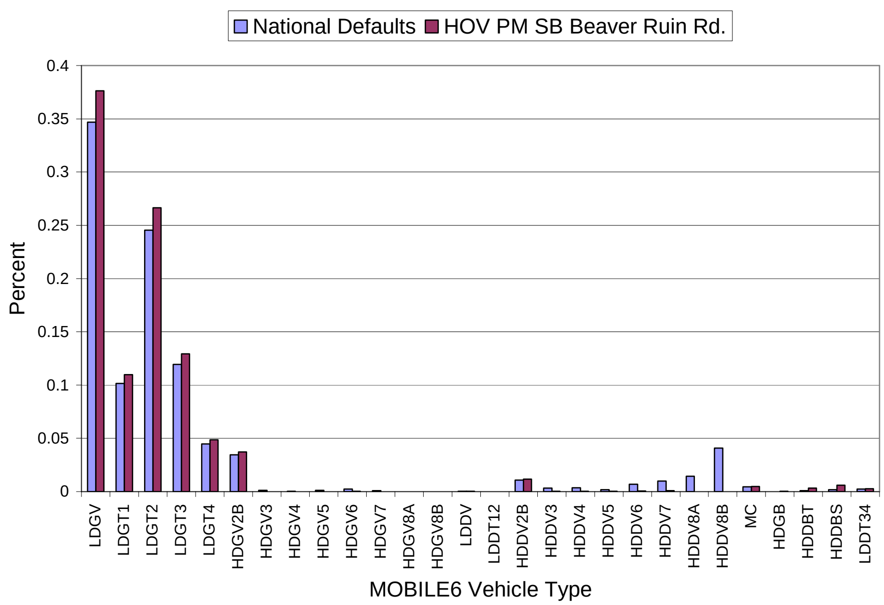

Figure D.40 Vehicle Class Distribution for HOV PM SB Beaver Ruin Rd.

APPENDIX E

MASS EMISSIONS OUTPUTS

Table E.1 Mass Emissions Outputs by Link

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	GP	NB	1	27692822	55.76	42.93	53.17	42.93
HC	GP	NB	1	27702771	102.92	85.85	103.16	85.85
HC	GP	NB	1	27712772	102.92	85.85	103.16	85.85
HC	GP	NB	1	27722773	92.62	77.27	92.85	77.27
HC	GP	NB	1	27732831	97.08	79.00	91.75	79.00
HC	GP	NB	1	27742775	105.90	86.18	100.09	86.18
HC	GP	NB	1	27752776	75.48	57.45	70.83	57.45
HC	GP	NB	1	27762778	83.02	63.20	77.91	63.20
HC	GP	NB	1	27782779	52.83	40.22	49.58	40.22
HC	GP	NB	1	27792780	104.31	85.23	109.73	85.23
HC	GP	NB	1	28222825	277.87	232.38	278.54	232.38
HC	GP	NB	1	28252770	669.07	515.11	638.07	515.11
HC	GP	NB	1	28312774	176.51	143.64	166.81	143.64
HC	GP	NB	1	36403641	68.79	58.95	65.76	58.95
HC	GP	NB	1	36413711	514.58	431.29	512.58	431.29
HC	GP	NB	1	36422769	1561.17	1201.91	1488.82	1201.91
HC	GP	NB	1	36933640	137.59	117.91	131.52	117.91
HC	GP	NB	1	37113642	85.76	71.88	85.43	71.88
HC	GP	NB	2	27802783	115.80	87.51	111.40	84.19
HC	GP	NB	2	27838877	231.61	175.01	222.81	168.37
HC	GP	NB	2	27852844	405.31	299.70	392.72	298.83
HC	GP	NB	2	27862849	347.41	262.52	336.08	254.49
HC	GP	NB	2	27872788	205.93	192.66	223.06	191.11
HC	GP	NB	2	27882796	79.40	65.63	76.96	63.62
HC	GP	NB	2	27962797	158.80	131.26	153.92	127.24
HC	GP	NB	2	27972798	158.80	131.26	153.92	127.24
HC	GP	NB	2	27982799	238.21	196.89	230.88	190.87
HC	GP	NB	2	27992800	264.67	238.97	255.96	230.97
HC	GP	NB	2	28002854	68.64	65.63	74.35	63.43
HC	GP	NB	2	28012803	370.68	387.12	402.40	375.31
HC	GP	NB	2	28032804	411.87	430.14	447.11	417.01
HC	GP	NB	2	28042805	297.02	281.74	288.99	273.26
HC	GP	NB	2	28052806	138.94	128.05	134.81	124.21
HC	GP	NB	2	28062807	277.88	256.09	269.61	248.41
HC	GP	NB	2	28072808	138.94	128.05	134.81	124.21
HC	GP	NB	2	28083053	138.94	128.05	134.81	124.21
HC	GP	NB	2	28392785	405.31	299.70	392.72	298.83

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	GP	NB	2	28432786	86.85	65.63	84.02	63.62
HC	GP	NB	2	28442843	191.07	144.38	184.85	139.97
HC	GP	NB	2	28498841	102.97	96.33	111.53	95.55
HC	GP	NB	2	28542801	68.64	65.63	74.35	63.43
HC	GP	NB	2	30532809	277.88	256.09	269.61	248.41
HC	GP	NB	2	31613162	148.51	156.65	142.89	149.02
HC	GP	NB	2	31623066	228.73	213.41	225.98	206.38
HC	GP	NB	2	88412787	91.53	85.63	99.14	84.94
HC	GP	NB	2	88772839	134.96	131.26	124.24	127.24
HC	GP	NB	2	121733161	301.92	281.70	298.96	273.25
HC	GP	NB	2	280912173	97.26	89.63	94.36	86.94
HC	GP	NB	3	28752878	56.38	95.39	56.38	88.79
HC	GP	NB	3	28783168	56.38	95.39	56.38	88.79
HC	GP	NB	3	28863164	371.95	669.97	371.95	604.72
HC	GP	NB	3	28873163	29.06	47.32	29.06	43.48
HC	GP	NB	3	30662887	116.23	189.27	116.23	173.94
HC	GP	NB	3	31632886	58.12	94.63	58.12	86.97
HC	GP	NB	3	31672875	135.32	228.94	135.32	209.34
HC	GP	NB	3	31683124	67.66	113.56	67.66	105.59
HC	GP	NB	3	41094111	403.12	675.59	403.12	630.06
HC	GP	NB	3	41115274	1126.05	1852.61	1126.05	1736.50
HC	GP	NB	3	52415246	115.94	190.45	115.94	178.30
HC	GP	NB	3	52465244	46.38	76.18	46.38	70.06
HC	GP	NB	3	52735470	704.80	1192.38	704.80	1109.88
HC	GP	NB	3	52745273	132.82	219.01	132.82	205.05
HC	GP	NB	3	54705471	161.69	266.62	161.69	249.62
HC	GP	NB	3	145174109	507.46	858.51	507.46	799.12
HC	GP	NB	3	156553167	76.68	129.73	76.68	118.62
HC	GP	NB	3	178515241	104.35	171.40	104.35	160.47
HC	GP	NB	3	312414514	527.75	885.77	527.75	823.61
HC	GP	NB	3	316415655	623.02	1122.20	623.02	1012.91
HC	GP	NB	3	547117851	512.78	843.65	512.78	800.08
HC	GP	NB	3	1451414515	130.59	218.85	130.59	204.10
HC	GP	NB	3	1451514517	113.56	190.31	113.56	177.48
HC	GP	NB	4	52385271	127.00	145.00	127.00	138.81
HC	GP	NB	4	52445238	101.84	116.00	101.84	109.71
HC	GP	NB	4	54695472	225.74	253.36	225.74	255.15
HC	GP	NB	4	54725473	1262.83	1483.84	1262.83	1402.25
HC	GP	NB	4	178545469	504.16	565.85	504.16	569.83
HC	GP	NB	4	527117854	152.40	174.00	152.40	166.57
HC	GP	NB	5	54735479	270.71	297.00	270.71	288.61
HC	GP	NB	5	54745475	183.23	225.98	183.23	214.58
HC	GP	NB	5	54755476	88.92	100.41	88.92	95.41
HC	GP	NB	5	54768593	288.76	316.80	288.76	307.85

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	GP	NB	5	54795474	1542.99	1881.63	1542.99	1787.45
HC	GP	NB	5	69596960	43.31	47.52	43.31	46.43
HC	GP	NB	5	69606961	293.44	331.36	293.44	314.86
HC	GP	NB	5	69619599	1387.19	1566.44	1387.19	1496.57
HC	GP	NB	5	69626963	273.54	293.54	273.54	289.97
HC	GP	NB	5	69636964	1649.11	1807.43	1649.11	1726.81
HC	GP	NB	5	85936959	833.79	914.77	833.79	893.79
HC	GP	NB	5	95996962	722.16	774.93	722.16	769.72
HC	GP	SB	1	27823139	29.40	60.85	29.40	65.71
HC	GP	SB	1	28242827	168.53	340.17	168.53	338.99
HC	GP	SB	1	28273144	31.21	71.10	31.21	66.53
HC	GP	SB	1	28282824	487.90	984.80	487.90	988.45
HC	GP	SB	1	28303143	94.67	191.08	94.67	191.79
HC	GP	SB	1	28363140	52.50	108.66	52.50	119.16
HC	GP	SB	1	29372782	86.37	199.38	86.37	181.40
HC	GP	SB	1	31392836	46.20	95.62	46.20	103.26
HC	GP	SB	1	31403141	105.01	217.32	105.01	238.33
HC	GP	SB	1	31413142	52.50	108.66	52.50	119.16
HC	GP	SB	1	31422830	67.82	136.49	67.82	134.64
HC	GP	SB	1	31432828	36.41	73.49	36.41	73.77
HC	GP	SB	1	31443701	873.85	1990.75	873.85	1862.70
HC	GP	SB	1	37013975	52.02	104.99	52.02	103.57
HC	GP	SB	1	39753976	312.09	629.94	312.09	621.43
HC	GP	SB	1	39763653	80.62	164.10	80.62	152.81
HC	GP	SB	2	27812937	75.57	58.04	71.72	53.10
HC	GP	SB	2	27892790	111.59	92.37	107.73	89.59
HC	GP	SB	2	27902791	188.92	170.60	180.96	164.64
HC	GP	SB	2	27912792	92.99	76.98	89.23	74.45
HC	GP	SB	2	27922793	47.23	26.16	45.24	46.31
HC	GP	SB	2	27932794	89.27	50.22	86.18	89.17
HC	GP	SB	2	27942795	111.59	62.78	107.73	111.46
HC	GP	SB	2	27953145	55.79	31.39	53.86	55.73
HC	GP	SB	2	28402781	334.77	341.08	323.19	316.25
HC	GP	SB	2	28413147	260.38	146.48	252.45	260.60
HC	GP	SB	2	28523156	111.59	92.37	107.73	89.59
HC	GP	SB	2	28533155	226.71	204.72	218.47	198.12
HC	GP	SB	2	28553154	67.30	36.62	63.68	64.84
HC	GP	SB	2	28572855	306.05	273.84	294.94	265.47
HC	GP	SB	2	28718230	113.65	99.51	106.60	95.84
HC	GP	SB	2	28722873	227.29	180.03	216.46	174.71
HC	GP	SB	2	28733051	340.94	270.04	324.69	262.06
HC	GP	SB	2	30493050	227.29	180.03	216.46	174.71
HC	GP	SB	2	30503151	131.03	116.10	127.91	112.83
HC	GP	SB	2	30513052	227.29	180.03	216.46	174.71

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	GP	SB	2	30523150	113.65	90.01	108.23	87.35
HC	GP	SB	2	31453146	122.75	69.06	118.50	122.61
HC	GP	SB	2	31462841	260.38	146.48	252.45	260.60
HC	GP	SB	2	31472840	130.19	73.24	126.23	130.30
HC	GP	SB	2	31503049	113.65	90.01	108.23	87.35
HC	GP	SB	2	31513152	262.06	232.20	255.83	225.66
HC	GP	SB	2	31522857	393.09	348.30	383.74	338.48
HC	GP	SB	2	31542853	67.30	36.62	63.68	64.84
HC	GP	SB	2	31552852	170.03	153.54	163.85	148.59
HC	GP	SB	2	31562789	111.59	92.37	107.73	89.59
HC	GP	SB	2	82302872	111.41	90.89	106.11	88.73
HC	GP	SB	3	28602861	104.01	67.10	97.92	67.10
HC	GP	SB	3	28612862	104.01	67.10	97.92	67.10
HC	GP	SB	3	28638657	141.45	91.38	131.24	91.38
HC	GP	SB	3	28672868	677.79	426.17	619.60	426.17
HC	GP	SB	3	28682869	105.90	66.59	98.24	66.59
HC	GP	SB	3	28692870	52.95	33.29	49.12	33.29
HC	GP	SB	3	28702871	211.81	133.18	196.48	133.18
HC	GP	SB	3	41084113	707.24	457.75	665.87	457.75
HC	GP	SB	3	52475242	165.48	110.00	153.76	110.00
HC	GP	SB	3	52665247	82.74	55.20	76.88	55.20
HC	GP	SB	3	52675268	280.82	181.43	264.39	181.43
HC	GP	SB	3	52685269	1300.07	839.93	1224.02	839.93
HC	GP	SB	3	52695270	237.87	158.12	224.29	158.12
HC	GP	SB	3	52704108	2020.18	1312.66	1910.33	1312.66
HC	GP	SB	3	86572867	1143.77	719.16	1045.57	719.16
HC	GP	SB	3	89982863	83.20	53.76	77.20	53.76
HC	GP	SB	3	145112860	125.88	80.52	120.23	80.52
HC	GP	SB	3	178128998	91.52	59.13	84.92	59.13
HC	GP	SB	3	178525267	944.82	627.00	902.10	627.00
HC	GP	SB	3	286217812	141.45	91.38	131.24	91.38
HC	GP	SB	3	411314509	734.33	470.36	694.61	470.36
HC	GP	SB	3	524217852	187.21	121.17	176.26	121.17
HC	GP	SB	3	1450914512	220.30	141.11	208.38	141.11
HC	GP	SB	3	1451014511	969.31	619.99	925.77	619.99
HC	GP	SB	3	1451214510	436.82	282.22	411.27	282.22
HC	GP	SB	4	52395266	133.01	98.20	125.61	98.20
HC	GP	SB	4	52635264	310.59	223.27	309.68	223.27
HC	GP	SB	4	52645265	901.72	648.20	899.06	648.20
HC	GP	SB	4	52655239	166.71	120.47	159.72	120.47
HC	GP	SB	4	54805263	1752.83	1235.11	1658.50	1235.11
HC	GP	SB	5	54785480	319.11	286.40	325.82	286.40
HC	GP	SB	5	54815567	129.06	115.30	127.03	115.30
HC	GP	SB	5	55675568	262.95	230.85	255.41	230.85

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	GP	SB	5	55685478	2169.93	1947.53	2219.62	1947.53
HC	GP	SB	5	69686987	2111.47	1731.35	2055.29	1731.35
HC	GP	SB	5	69837280	350.61	307.80	339.93	307.80
HC	GP	SB	5	69848592	993.72	887.77	978.09	887.77
HC	GP	SB	5	69876989	326.22	288.56	319.91	288.56
HC	GP	SB	5	69899598	745.82	637.44	722.85	637.44
HC	GP	SB	5	72806984	51.62	45.82	50.81	45.82
HC	GP	SB	5	85925481	329.74	295.95	336.69	295.95
HC	GP	SB	5	95986983	1709.20	1500.50	1660.14	1500.50
HC	HOV	NB	1	1558615587	27.95	10.79	29.09	10.79
HC	HOV	NB	1	1558715588	13.98	5.40	14.55	5.40
HC	HOV	NB	1	1558815590	82.96	31.53	87.28	31.53
HC	HOV	NB	1	1559015591	14.06	5.25	14.55	5.25
HC	HOV	NB	1	1559115592	194.22	73.45	203.64	73.45
HC	HOV	NB	1	1559215593	6.94	2.62	7.27	2.62
HC	HOV	NB	1	1559315594	37.95	14.19	39.27	14.19
HC	HOV	NB	1	1559415595	83.24	31.48	87.28	31.48
HC	HOV	NB	1	1559515596	13.87	5.26	14.55	5.26
HC	HOV	NB	1	1559615597	13.87	5.26	14.55	5.26
HC	HOV	NB	1	1559715598	12.49	4.73	13.09	4.73
HC	HOV	NB	1	1559815599	14.28	5.24	14.55	5.24
HC	HOV	NB	1	1559915600	28.56	10.47	29.09	10.47
HC	HOV	NB	1	1560015601	17.14	6.28	17.46	6.28
HC	HOV	NB	1	1560115602	14.28	5.24	14.55	5.24
HC	HOV	NB	1	1560215603	15.29	5.75	16.00	5.75
HC	HOV	NB	1	1560315604	9.73	3.66	10.18	3.66
HC	HOV	NB	1	1560415605	20.92	7.81	21.82	7.81
HC	HOV	NB	2	1560515606	16.89	15.46	14.86	15.71
HC	HOV	NB	2	1560615607	33.78	30.92	29.71	31.42
HC	HOV	NB	2	1560715609	16.86	15.77	14.86	15.71
HC	HOV	NB	2	1560915610	34.39	31.55	29.71	31.42
HC	HOV	NB	2	1561015611	34.39	31.55	29.71	31.42
HC	HOV	NB	2	1561115612	21.21	17.35	16.34	17.28
HC	HOV	NB	2	1561215613	9.64	7.89	7.43	7.86
HC	HOV	NB	2	1561315614	38.56	31.55	29.71	31.42
HC	HOV	NB	2	1561415615	15.17	13.92	13.37	14.14
HC	HOV	NB	2	1561515616	13.49	13.78	11.88	12.57
HC	HOV	NB	2	1561615617	29.23	26.28	25.25	26.71
HC	HOV	NB	2	1561715618	10.11	9.46	8.91	9.43
HC	HOV	NB	2	1561815619	16.86	15.77	14.86	15.71
HC	HOV	NB	2	1561915620	16.86	15.77	14.86	15.71
HC	HOV	NB	2	1562015621	25.29	23.66	22.28	23.57
HC	HOV	NB	2	1562115622	44.70	41.01	38.63	40.85
HC	HOV	NB	2	1562215623	10.32	9.46	8.91	9.43

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	HOV	NB	2	1562315624	10.32	9.46	8.91	9.43
HC	HOV	NB	2	1562415627	46.42	46.82	40.11	42.42
HC	HOV	NB	2	1562715628	51.58	52.03	44.57	47.14
HC	HOV	NB	2	1562815629	33.87	30.78	29.71	31.42
HC	HOV	NB	2	1562915630	16.73	15.39	14.86	15.71
HC	HOV	NB	2	1563015631	33.46	30.78	29.71	31.42
HC	HOV	NB	2	1563115632	16.73	15.39	14.86	15.71
HC	HOV	NB	2	1563215633	16.73	15.39	14.86	15.71
HC	HOV	NB	2	1563315634	33.46	30.78	29.71	31.42
HC	HOV	NB	2	1563415635	50.19	46.17	44.57	47.14
HC	HOV	NB	2	1563515726	32.45	31.21	29.71	31.42
HC	HOV	NB	2	1572615727	33.46	30.78	29.71	31.42
HC	HOV	NB	3	1349415732	3.67	18.17	3.67	27.21
HC	HOV	NB	3	1349615746	4.32	20.87	4.32	32.01
HC	HOV	NB	3	1572715728	4.44	20.80	4.44	32.01
HC	HOV	NB	3	1572815729	1.11	5.20	1.11	8.00
HC	HOV	NB	3	1572915730	3.56	16.64	3.56	25.61
HC	HOV	NB	3	1573015731	18.21	87.36	18.21	134.44
HC	HOV	NB	3	1573113494	29.27	140.40	29.27	216.06
HC	HOV	NB	3	1573215733	7.98	38.74	7.98	59.22
HC	HOV	NB	3	1573315734	2.59	12.52	2.59	19.21
HC	HOV	NB	3	1573415735	3.24	15.66	3.24	24.01
HC	HOV	NB	3	1573515736	1.47	7.28	1.47	11.20
HC	HOV	NB	3	1573615737	16.36	81.12	16.36	124.84
HC	HOV	NB	3	1573715738	5.10	25.05	5.10	38.41
HC	HOV	NB	3	1573815739	3.83	18.79	3.83	28.81
HC	HOV	NB	3	1573915740	19.13	93.60	19.13	144.04
HC	HOV	NB	3	1574015741	14.77	72.02	14.77	110.43
HC	HOV	NB	3	1574115742	42.04	203.31	42.04	312.09
HC	HOV	NB	3	1574215743	5.18	25.05	5.18	38.41
HC	HOV	NB	3	1574315744	26.75	130.89	26.75	200.06
HC	HOV	NB	3	1574415745	6.05	29.22	6.05	44.81
HC	HOV	NB	3	1574513496	15.95	77.15	15.95	118.43
HC	HOV	NB	3	1574616411	4.10	19.83	4.10	30.41
HC	HOV	NB	3	1641110669	1.54	7.31	1.54	11.20
HC	HOV	NB	4	1066910670	5.03	33.04	5.03	35.68
HC	HOV	NB	4	1067010671	4.73	30.90	4.73	34.13
HC	HOV	NB	4	1067110672	19.78	128.93	19.78	142.71
HC	HOV	NB	4	1067210673	6.22	39.32	6.22	44.98
HC	HOV	NB	4	1067310674	38.28	279.25	38.28	280.76
HC	HOV	NB	5	1067410675	8.84	40.73	8.84	44.61
HC	HOV	NB	5	1067510676	56.20	279.60	56.20	284.59
HC	HOV	NB	5	1067610677	5.38	30.96	5.38	27.69
HC	HOV	NB	5	1067710678	1.79	8.36	1.79	9.23

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	HOV	NB	5	1067810679	9.75	44.94	9.75	49.23
HC	HOV	NB	5	1067910680	23.09	103.62	23.09	116.91
HC	HOV	NB	5	1068010681	1.22	5.45	1.22	6.15
HC	HOV	NB	5	1068110682	9.56	44.59	9.56	49.23
HC	HOV	NB	5	1068210683	43.62	203.45	43.62	224.59
HC	HOV	NB	5	1068310684	14.21	75.20	14.21	73.84
HC	HOV	NB	5	1068410685	9.28	43.46	9.28	47.69
HC	HOV	NB	5	1068510686	47.21	220.17	47.21	243.05
HC	HOV	SB	1	1554815549	6.85	24.98	6.85	36.59
HC	HOV	SB	1	1554915550	2.40	8.81	2.40	12.73
HC	HOV	SB	1	1555015551	3.27	12.16	3.27	17.50
HC	HOV	SB	1	1555115552	2.94	13.74	2.94	15.91
HC	HOV	SB	1	1555215553	5.88	27.48	5.88	31.82
HC	HOV	SB	1	1555315554	2.94	13.74	2.94	15.91
HC	HOV	SB	1	1555415555	3.92	13.86	3.92	20.68
HC	HOV	SB	1	1555515556	3.92	13.86	3.92	20.68
HC	HOV	SB	1	1555615557	1.51	5.33	1.51	7.95
HC	HOV	SB	1	1555715558	20.23	71.44	20.23	106.58
HC	HOV	SB	1	1555815559	8.15	28.79	8.15	42.95
HC	HOV	SB	1	1555915560	1.51	6.01	1.51	7.95
HC	HOV	SB	1	1556015561	42.26	168.24	42.26	222.71
HC	HOV	SB	1	1556115562	3.03	10.66	3.03	15.91
HC	HOV	SB	1	1556215563	18.16	63.98	18.16	95.45
HC	HOV	SB	1	1556315564	5.56	19.61	5.56	28.63
HC	HOV	SB	2	1551715518	26.15	33.13	29.53	30.19
HC	HOV	SB	2	1551815519	39.83	53.95	44.30	45.29
HC	HOV	SB	2	1551915520	26.55	35.97	29.53	30.19
HC	HOV	SB	2	1552015521	13.28	17.98	14.77	15.10
HC	HOV	SB	2	1552115522	13.28	17.98	14.77	15.10
HC	HOV	SB	2	1552215523	26.55	35.97	29.53	30.19
HC	HOV	SB	2	1552315524	13.28	16.53	14.77	15.10
HC	HOV	SB	2	1552415525	26.55	33.06	29.53	30.19
HC	HOV	SB	2	1552515526	39.83	49.59	44.30	45.29
HC	HOV	SB	2	1552615529	35.60	49.78	39.87	40.76
HC	HOV	SB	2	1552915530	9.23	12.91	10.34	10.57
HC	HOV	SB	2	1553015531	9.23	12.91	10.34	10.57
HC	HOV	SB	2	1553115532	35.60	49.43	39.87	40.76
HC	HOV	SB	2	1553215533	19.78	27.46	22.15	22.64
HC	HOV	SB	2	1553315534	13.13	16.74	14.77	15.10
HC	HOV	SB	2	1553415535	13.13	16.74	14.77	15.10
HC	HOV	SB	2	1553515536	13.13	16.74	14.77	15.10
HC	HOV	SB	2	1553615537	26.26	32.75	29.53	30.19
HC	HOV	SB	2	1553715538	13.13	15.38	14.77	15.10
HC	HOV	SB	2	1553815539	6.57	8.37	7.38	7.55

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	HOV	SB	2	1553915540	10.55	13.10	11.81	12.08
HC	HOV	SB	2	1554015541	13.18	16.37	14.77	15.10
HC	HOV	SB	2	1554115542	6.59	8.19	7.38	7.55
HC	HOV	SB	2	1554215543	14.50	18.01	16.24	16.61
HC	HOV	SB	2	1554315544	26.37	33.48	29.53	30.19
HC	HOV	SB	2	1554415545	26.37	33.48	29.53	30.19
HC	HOV	SB	2	1554515546	13.18	16.74	14.77	15.10
HC	HOV	SB	2	1554615547	39.40	50.23	44.30	45.29
HC	HOV	SB	2	1554715548	13.09	11.19	14.77	15.10
HC	HOV	SB	2	1565915517	18.31	23.19	20.67	21.13
HC	HOV	SB	2	1572415659	15.79	21.58	17.72	18.12
HC	HOV	SB	3	1070610707	7.52	3.29	10.99	3.29
HC	HOV	SB	3	1070715701	20.41	8.96	29.82	8.96
HC	HOV	SB	3	1349515702	79.41	34.40	117.71	34.40
HC	HOV	SB	3	1570113495	21.18	9.39	31.39	9.39
HC	HOV	SB	3	1570215703	28.33	12.37	42.38	12.37
HC	HOV	SB	3	1570315704	131.18	57.00	196.19	57.00
HC	HOV	SB	3	1570415705	25.78	11.27	37.67	11.27
HC	HOV	SB	3	1570515706	207.53	89.89	307.62	89.89
HC	HOV	SB	3	1570615707	73.99	32.10	109.87	32.10
HC	HOV	SB	3	1570715709	73.46	32.07	109.87	32.07
HC	HOV	SB	3	1570915710	22.04	9.62	32.96	9.62
HC	HOV	SB	3	1571015711	43.03	18.79	64.35	18.79
HC	HOV	SB	3	1571115713	82.30	35.11	120.85	35.11
HC	HOV	SB	3	1571315714	8.55	3.65	12.56	3.65
HC	HOV	SB	3	1571415715	15.85	7.04	23.54	7.04
HC	HOV	SB	3	1571515716	12.68	5.63	18.83	5.63
HC	HOV	SB	3	1571615717	31.00	13.29	45.52	13.29
HC	HOV	SB	3	1571715718	9.62	4.12	14.13	4.12
HC	HOV	SB	3	1571815719	17.97	8.05	26.68	8.05
HC	HOV	SB	3	1571915720	144.29	61.51	211.88	61.51
HC	HOV	SB	3	1572015721	90.85	38.73	133.41	38.73
HC	HOV	SB	3	1572115722	15.17	6.93	21.97	6.93
HC	HOV	SB	3	1572215723	5.42	2.47	7.85	2.47
HC	HOV	SB	3	1572315724	21.67	9.89	31.39	9.89
HC	HOV	SB	4	1070110702	254.06	68.35	278.92	68.35
HC	HOV	SB	4	1070210703	41.82	11.24	45.98	11.24
HC	HOV	SB	4	1070310704	124.72	34.40	139.46	34.40
HC	HOV	SB	4	1070410705	31.41	8.95	35.25	8.95
HC	HOV	SB	4	1070510706	31.86	9.02	35.25	9.02
HC	HOV	SB	5	1068910690	250.95	92.53	231.46	92.53
HC	HOV	SB	5	1069010691	48.38	18.16	45.13	18.16
HC	HOV	SB	5	1069110692	77.11	27.66	69.87	27.66
HC	HOV	SB	5	1069210693	233.97	85.54	213.99	85.54

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
HC	HOV	SB	5	1069310694	49.34	18.04	45.13	18.04
HC	HOV	SB	5	1069410695	6.29	2.34	5.82	2.34
HC	HOV	SB	5	1069510696	122.61	45.70	113.55	45.70
HC	HOV	SB	5	1069610697	47.16	17.57	43.67	17.57
HC	HOV	SB	5	1069710698	9.43	3.48	8.73	3.48
HC	HOV	SB	5	1069810699	30.24	11.02	27.66	11.02
HC	HOV	SB	5	1069910700	292.86	107.79	267.85	107.79
HC	HOV	SB	5	1070010701	44.01	16.40	40.76	16.40
CO	GP	NB	1	27692822	991.70	1825.78	954.44	1825.78
CO	GP	NB	1	27702771	2052.12	3651.55	2132.17	3651.55
CO	GP	NB	1	27712772	2052.12	3651.55	2132.17	3651.55
CO	GP	NB	1	27722773	1846.91	3286.40	1918.95	3286.40
CO	GP	NB	1	27732831	1876.40	3267.78	1811.27	3267.78
CO	GP	NB	1	27742775	2046.98	3564.85	1975.93	3564.85
CO	GP	NB	1	27752776	1331.41	2376.57	1261.07	2376.57
CO	GP	NB	1	27762778	1464.55	2614.23	1387.18	2614.23
CO	GP	NB	1	27782779	931.99	1663.60	882.75	1663.60
CO	GP	NB	1	27792780	1922.56	3712.65	1919.71	3712.65
CO	GP	NB	1	28222825	5540.72	11381.99	5756.86	11381.99
CO	GP	NB	1	28252770	11900.38	21909.31	11453.32	21909.31
CO	GP	NB	1	28312774	3411.63	5941.42	3293.21	5941.42
CO	GP	NB	1	36403641	1730.75	2903.10	1695.32	2903.10
CO	GP	NB	1	36413711	10260.59	20522.70	10594.23	20522.70
CO	GP	NB	1	36422769	27767.56	51121.72	26724.41	51121.72
CO	GP	NB	1	36933640	3461.51	5806.20	3390.63	5806.20
CO	GP	NB	1	37113642	1710.10	3420.45	1765.70	3420.45
CO	GP	NB	2	27802783	1911.04	3096.97	1857.54	3032.75
CO	GP	NB	2	27838877	3822.08	6193.93	3715.07	6065.51
CO	GP	NB	2	27852844	6688.64	13253.64	6548.13	12500.20
CO	GP	NB	2	27862849	5733.12	9290.90	5603.77	9167.72
CO	GP	NB	2	27872788	3844.19	8520.20	3961.19	7994.19
CO	GP	NB	2	27882796	1367.47	2322.73	1338.57	2291.93
CO	GP	NB	2	27962797	2734.94	4645.45	2677.14	4583.86
CO	GP	NB	2	27972798	2734.94	4645.45	2677.14	4583.86
CO	GP	NB	2	27982799	4102.41	6968.18	4015.70	6875.79
CO	GP	NB	2	27992800	4558.23	7762.30	4451.97	7551.54
CO	GP	NB	2	28002854	1281.40	2322.73	1320.40	2284.98
CO	GP	NB	2	28012803	6919.54	12574.93	7146.04	12270.69
CO	GP	NB	2	28032804	7688.38	13972.15	7940.04	13634.10
CO	GP	NB	2	28042805	5316.35	9217.82	5218.76	8997.73
CO	GP	NB	2	28052806	2727.45	4657.57	2702.87	4595.32
CO	GP	NB	2	28062807	5454.90	9315.14	5405.74	9190.64
CO	GP	NB	2	28072808	2727.45	4657.57	2702.87	4595.32
CO	GP	NB	2	28083053	2727.45	4657.57	2702.87	4595.32

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	GP	NB	2	28392785	6688.64	13253.64	6548.13	12500.20
CO	GP	NB	2	28432786	1433.28	2322.73	1400.94	2291.93
CO	GP	NB	2	28442843	3153.21	5110.00	3082.08	5042.25
CO	GP	NB	2	28498841	1922.09	4260.10	1980.59	3997.09
CO	GP	NB	2	28542801	1281.40	2322.73	1320.40	2284.98
CO	GP	NB	2	30532809	5454.90	9315.14	5405.74	9190.64
CO	GP	NB	2	31613162	2658.17	4913.97	2580.35	4710.36
CO	GP	NB	2	31623066	5117.36	7762.62	5169.45	7635.66
CO	GP	NB	2	88412787	1708.53	3786.75	1760.53	3552.97
CO	GP	NB	2	88772839	2541.09	4645.45	2433.81	4583.86
CO	GP	NB	2	121733161	6754.92	10246.65	6838.89	10109.70
CO	GP	NB	2	280912173	1909.21	3260.30	1892.01	3216.72
CO	GP	NB	3	28752878	1556.72	3938.91	1556.72	3756.45
CO	GP	NB	3	28783168	1556.72	3938.91	1556.72	3756.45
CO	GP	NB	3	28863164	8086.21	21379.27	8086.21	19430.91
CO	GP	NB	3	28873163	631.74	1684.67	631.74	1575.63
CO	GP	NB	3	30662887	2526.94	6738.67	2526.94	6302.52
CO	GP	NB	3	31632886	1263.47	3369.34	1263.47	3151.26
CO	GP	NB	3	31672875	3736.13	9453.39	3736.13	8856.40
CO	GP	NB	3	31683124	1868.07	4043.20	1868.07	3825.99
CO	GP	NB	3	41094111	10761.11	30207.16	10761.11	28847.19
CO	GP	NB	3	41115274	30871.58	78671.12	30871.58	75370.51
CO	GP	NB	3	52415246	3249.32	9317.34	3249.32	8377.50
CO	GP	NB	3	52465244	1299.73	3726.94	1299.73	3291.87
CO	GP	NB	3	52735470	19459.03	49236.39	19459.03	46955.60
CO	GP	NB	3	52745273	3641.26	10714.94	3641.26	9634.12
CO	GP	NB	3	54705471	4432.84	13044.28	4432.84	11728.49
CO	GP	NB	3	145174109	14010.50	35450.20	14010.50	33808.03
CO	GP	NB	3	156553167	2117.14	5356.92	2117.14	5018.63
CO	GP	NB	3	178515241	2924.39	8385.61	2924.39	7539.75
CO	GP	NB	3	312414514	14570.92	31536.99	14570.92	29842.76
CO	GP	NB	3	316415655	13544.40	35810.27	13544.40	32546.77
CO	GP	NB	3	547117851	14058.44	35825.62	14058.44	34726.31
CO	GP	NB	3	1451414515	3485.99	9785.42	3485.99	9344.86
CO	GP	NB	3	1451514517	3031.30	8509.06	3031.30	8125.97
CO	GP	NB	4	52385271	3152.07	6689.64	3152.07	6143.23
CO	GP	NB	4	52445238	2588.11	5351.71	2588.11	4855.36
CO	GP	NB	4	54695472	5364.09	9628.58	5364.09	9098.14
CO	GP	NB	4	54725473	31584.77	49340.01	31584.77	47489.08
CO	GP	NB	4	178545469	11979.79	21503.82	11979.79	20319.17
CO	GP	NB	4	527117854	3782.48	8027.57	3782.48	7371.88
CO	GP	NB	5	54735479	6138.01	11424.87	6138.01	11347.69
CO	GP	NB	5	54745475	3790.90	6351.94	3790.90	6085.88
CO	GP	NB	5	54755476	2125.51	3188.28	2125.51	3088.51

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	GP	NB	5	54768593	6547.21	12186.53	6547.21	12104.21
CO	GP	NB	5	54795474	33026.79	53397.21	33026.79	51177.61
CO	GP	NB	5	69596960	982.08	1827.98	982.08	1825.58
CO	GP	NB	5	69606961	7014.17	10521.31	7014.17	10192.09
CO	GP	NB	5	69619599	33157.90	49737.11	33157.90	48444.93
CO	GP	NB	5	69626963	5758.81	11606.74	5758.81	10754.74
CO	GP	NB	5	69636964	34118.10	57388.97	34118.10	55897.99
CO	GP	NB	5	85936959	18905.06	35188.60	18905.06	35142.49
CO	GP	NB	5	95996962	15203.27	30641.81	15203.27	28548.16
CO	GP	SB	1	27823139	677.83	1955.49	677.83	1979.54
CO	GP	SB	1	28242827	4235.86	13353.02	4235.86	12492.53
CO	GP	SB	1	28273144	784.42	2201.59	784.42	2075.58
CO	GP	SB	1	28282824	12263.07	38657.82	12263.07	36426.82
CO	GP	SB	1	28303143	2379.40	7500.77	2379.40	7067.89
CO	GP	SB	1	28363140	1210.40	3491.95	1210.40	3589.67
CO	GP	SB	1	29372782	1722.33	6032.92	1722.33	5533.92
CO	GP	SB	1	31392836	1065.16	3072.91	1065.16	3110.70
CO	GP	SB	1	31403141	2420.81	6983.90	2420.81	7179.33
CO	GP	SB	1	31413142	1210.40	3491.95	1210.40	3589.67
CO	GP	SB	1	31422830	1613.41	5357.69	1613.41	4961.96
CO	GP	SB	1	31432828	915.15	2884.91	915.15	2718.42
CO	GP	SB	1	31443701	21963.70	61644.53	21963.70	58116.36
CO	GP	SB	1	37013975	1307.36	4121.30	1307.36	3816.89
CO	GP	SB	1	39753976	7844.18	24727.81	7844.18	22901.34
CO	GP	SB	1	39763653	2159.31	6775.41	2159.31	6450.63
CO	GP	SB	2	27812937	1640.86	2006.18	1599.46	1902.06
CO	GP	SB	2	27892790	2664.56	3182.83	2640.95	3142.91
CO	GP	SB	2	27902791	4102.14	5355.07	4035.47	5208.34
CO	GP	SB	2	27912792	2220.46	2652.36	2187.49	2611.76
CO	GP	SB	2	27922793	1025.53	1065.23	1008.87	1397.52
CO	GP	SB	2	27932794	2131.65	2045.24	2112.76	2690.76
CO	GP	SB	2	27942795	2664.56	2556.55	2640.95	3363.45
CO	GP	SB	2	27953145	1332.28	1278.28	1320.47	1681.73
CO	GP	SB	2	28402781	7993.67	10362.73	7922.84	9883.41
CO	GP	SB	2	28413147	6217.30	5965.29	6188.81	7863.74
CO	GP	SB	2	28523156	2664.56	3182.83	2640.95	3142.91
CO	GP	SB	2	28533155	4922.57	6426.09	4872.01	6267.55
CO	GP	SB	2	28553154	1305.18	1491.32	1261.78	1956.52
CO	GP	SB	2	28572855	6645.46	8636.39	6577.21	8433.21
CO	GP	SB	2	28718230	2240.96	3163.76	2146.52	3068.75
CO	GP	SB	2	28722873	4481.91	6378.17	4358.90	6297.66
CO	GP	SB	2	28733051	6722.87	9567.25	6538.36	9446.49
CO	GP	SB	2	30493050	4481.91	6378.17	4358.90	6297.66
CO	GP	SB	2	30503151	2943.42	3691.06	2937.70	3612.64

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	GP	SB	2	30513052	4481.91	6378.17	4358.90	6297.66
CO	GP	SB	2	30523150	2240.96	3189.08	2179.45	3148.83
CO	GP	SB	2	31453146	2931.01	2812.21	2905.04	3699.80
CO	GP	SB	2	31462841	6217.30	5965.29	6188.81	7863.74
CO	GP	SB	2	31472840	3108.65	2982.64	3094.40	3931.87
CO	GP	SB	2	31503049	2240.96	3189.08	2179.45	3148.83
CO	GP	SB	2	31513152	5886.84	7382.12	5875.39	7225.28
CO	GP	SB	2	31522857	8830.27	11073.18	8813.09	10837.93
CO	GP	SB	2	31542853	1305.18	1491.32	1261.78	1956.52
CO	GP	SB	2	31552852	3691.92	4819.57	3654.01	4700.66
CO	GP	SB	2	31562789	2664.56	3182.83	2640.95	3142.91
CO	GP	SB	2	82302872	2772.37	3731.77	2716.18	3731.55
CO	GP	SB	3	28602861	2644.85	3045.33	2561.52	3045.33
CO	GP	SB	3	28612862	2644.85	3045.33	2561.52	3045.33
CO	GP	SB	3	28638657	3596.99	4533.53	3433.05	4533.53
CO	GP	SB	3	28672868	13683.22	14453.74	12771.96	14453.74
CO	GP	SB	3	28682869	2138.00	2258.40	2025.04	2258.40
CO	GP	SB	3	28692870	1069.00	1129.20	1012.52	1129.20
CO	GP	SB	3	28702871	4276.01	4516.79	4050.08	4516.79
CO	GP	SB	3	41084113	17984.96	22069.61	17418.33	22069.61
CO	GP	SB	3	52475242	4568.82	5432.83	4365.13	5432.83
CO	GP	SB	3	52665247	2284.41	2753.38	2182.56	2753.38
CO	GP	SB	3	52675268	7141.09	9000.40	6916.10	9000.40
CO	GP	SB	3	52685269	33060.58	41668.52	32019.00	41668.52
CO	GP	SB	3	52695270	6567.67	7809.69	6367.39	7809.69
CO	GP	SB	3	52704108	52897.06	63287.84	51278.65	63287.84
CO	GP	SB	3	86572867	23090.43	24390.68	21552.68	24390.68
CO	GP	SB	3	89982863	2115.88	2666.79	2019.44	2666.79
CO	GP	SB	3	145112860	2889.26	3654.39	2822.10	3654.39
CO	GP	SB	3	178128998	2327.46	2933.46	2221.39	2933.46
CO	GP	SB	3	178525267	24739.55	30967.12	24214.94	30967.12
CO	GP	SB	3	286217812	3596.99	4533.53	3433.05	4533.53
CO	GP	SB	3	411314509	16854.02	23334.37	16304.34	23334.37
CO	GP	SB	3	524217852	4760.72	5841.95	4610.74	5841.95
CO	GP	SB	3	1450914512	5056.21	7000.31	4891.30	7000.31
CO	GP	SB	3	1451014511	22247.31	28138.81	21730.20	28138.81
CO	GP	SB	3	1451214510	11108.35	14000.62	10758.38	14000.62
CO	GP	SB	4	52395266	3595.31	4756.49	3493.50	4756.49
CO	GP	SB	4	52635264	6285.72	10859.91	6493.22	10859.91
CO	GP	SB	4	52645265	18248.87	31528.76	18851.29	31528.76
CO	GP	SB	4	52655239	4269.51	5685.97	4194.64	5685.97
CO	GP	SB	4	54805263	34365.63	50442.45	33225.87	50442.45
CO	GP	SB	5	54785480	6111.62	12671.40	6477.97	12671.40
CO	GP	SB	5	54815567	2823.50	4937.58	2861.54	4937.58

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	GP	SB	5	55675568	4877.49	9265.72	4841.81	9265.72
CO	GP	SB	5	55685478	41559.03	86165.54	44129.97	86165.54
CO	GP	SB	5	69686987	35695.76	69492.93	35099.67	69492.93
CO	GP	SB	5	69837280	6503.32	12354.30	6444.08	12354.30
CO	GP	SB	5	69848592	21740.99	38019.34	22033.85	38019.34
CO	GP	SB	5	69876989	6692.70	11582.15	6749.51	11582.15
CO	GP	SB	5	69899598	13598.23	26566.29	13475.15	26566.29
CO	GP	SB	5	72806984	1129.40	2027.42	1144.62	2027.42
CO	GP	SB	5	85925481	6315.34	13093.78	6693.91	13093.78
CO	GP	SB	5	95986983	31703.66	60227.20	31471.75	60227.20
CO	HOV	NB	1	1558615587	797.62	531.88	708.24	531.88
CO	HOV	NB	1	1558715588	398.81	265.94	354.12	265.94
CO	HOV	NB	1	1558815590	2151.78	1503.21	2124.71	1503.21
CO	HOV	NB	1	1559015591	327.75	257.33	354.12	257.33
CO	HOV	NB	1	1559115592	3978.76	3602.64	4957.65	3602.64
CO	HOV	NB	1	1559215593	142.10	128.67	177.06	128.67
CO	HOV	NB	1	1559315594	884.93	676.45	956.12	676.45
CO	HOV	NB	1	1559415595	1705.18	1543.99	2124.71	1543.99
CO	HOV	NB	1	1559515596	284.20	250.54	354.12	250.54
CO	HOV	NB	1	1559615597	284.20	250.54	354.12	250.54
CO	HOV	NB	1	1559715598	255.78	225.48	318.71	225.48
CO	HOV	NB	1	1559815599	283.33	217.45	354.12	217.45
CO	HOV	NB	1	1559915600	566.65	434.91	708.24	434.91
CO	HOV	NB	1	1560015601	339.99	260.95	424.94	260.95
CO	HOV	NB	1	1560115602	283.33	217.45	354.12	217.45
CO	HOV	NB	1	1560215603	384.71	258.44	389.53	258.44
CO	HOV	NB	1	1560315604	244.81	164.46	247.88	164.46
CO	HOV	NB	1	1560415605	504.43	362.27	531.18	362.27
CO	HOV	NB	2	1560515606	378.05	682.13	371.54	687.51
CO	HOV	NB	2	1560615607	756.10	1364.27	743.08	1375.02
CO	HOV	NB	2	1560715609	323.77	557.59	371.54	687.51
CO	HOV	NB	2	1560915610	687.63	1115.18	743.08	1375.02
CO	HOV	NB	2	1561015611	687.63	1115.18	743.08	1375.02
CO	HOV	NB	2	1561115612	379.01	613.35	408.69	756.26
CO	HOV	NB	2	1561215613	172.28	278.80	185.77	343.75
CO	HOV	NB	2	1561315614	689.10	1115.18	743.08	1375.02
CO	HOV	NB	2	1561415615	291.39	613.92	334.38	618.76
CO	HOV	NB	2	1561515616	259.01	447.34	297.23	550.01
CO	HOV	NB	2	1561615617	584.48	1159.63	631.61	1168.76
CO	HOV	NB	2	1561715618	194.26	334.55	222.92	412.51
CO	HOV	NB	2	1561815619	323.77	557.59	371.54	687.51
CO	HOV	NB	2	1561915620	323.77	557.59	371.54	687.51
CO	HOV	NB	2	1562015621	485.65	836.39	557.31	1031.26
CO	HOV	NB	2	1562115622	893.91	1449.74	966.00	1787.52

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	HOV	NB	2	1562215623	206.29	334.55	222.92	412.51
CO	HOV	NB	2	1562315624	206.29	334.55	222.92	412.51
CO	HOV	NB	2	1562415627	928.30	1516.06	1003.15	1856.27
CO	HOV	NB	2	1562715628	1031.44	1684.51	1114.61	2062.53
CO	HOV	NB	2	1562815629	688.92	1048.07	743.08	1375.02
CO	HOV	NB	2	1562915630	387.51	559.00	371.54	687.51
CO	HOV	NB	2	1563015631	775.03	1118.00	743.08	1375.02
CO	HOV	NB	2	1563115632	387.51	559.00	371.54	687.51
CO	HOV	NB	2	1563215633	387.51	559.00	371.54	687.51
CO	HOV	NB	2	1563315634	775.03	1118.00	743.08	1375.02
CO	HOV	NB	2	1563415635	1162.54	1677.00	1114.61	2062.53
CO	HOV	NB	2	1563515726	953.53	1414.87	743.08	1375.02
CO	HOV	NB	2	1572615727	775.03	1118.00	743.08	1375.02
CO	HOV	NB	3	1349415732	83.25	878.16	83.25	1161.40
CO	HOV	NB	3	1349615746	99.21	1013.64	99.21	1366.35
CO	HOV	NB	3	1572715728	77.06	732.93	77.06	1366.35
CO	HOV	NB	3	1572815729	19.27	183.23	19.27	341.59
CO	HOV	NB	3	1572915730	61.65	586.34	61.65	1093.08
CO	HOV	NB	3	1573015731	354.96	3078.30	354.96	5738.67
CO	HOV	NB	3	1573113494	570.48	4947.28	570.48	9222.86
CO	HOV	NB	3	1573215733	181.19	1585.70	181.19	2527.75
CO	HOV	NB	3	1573315734	59.53	608.18	59.53	819.81
CO	HOV	NB	3	1573415735	74.41	760.23	74.41	1024.76
CO	HOV	NB	3	1573515736	33.17	256.53	33.17	478.22
CO	HOV	NB	3	1573615737	369.66	2858.43	369.66	5328.76
CO	HOV	NB	3	1573715738	110.82	1110.98	110.82	1639.62
CO	HOV	NB	3	1573815739	83.11	833.23	83.11	1229.71
CO	HOV	NB	3	1573915740	415.57	3298.18	415.57	6148.57
CO	HOV	NB	3	1574015741	351.01	3194.06	351.01	4713.90
CO	HOV	NB	3	1574115742	942.12	8560.16	942.12	13321.90
CO	HOV	NB	3	1574215743	119.05	1216.36	119.05	1639.62
CO	HOV	NB	3	1574315744	635.89	5357.10	635.89	8539.68
CO	HOV	NB	3	1574415745	138.89	1419.09	138.89	1912.89
CO	HOV	NB	3	1574513496	357.52	3248.47	357.52	5055.49
CO	HOV	NB	3	1574616411	94.25	962.95	94.25	1298.03
CO	HOV	NB	3	1641110669	38.29	354.77	38.29	478.22
CO	HOV	NB	4	1066910670	125.93	1581.31	125.93	1505.00
CO	HOV	NB	4	1067010671	109.21	1443.89	109.21	1439.56
CO	HOV	NB	4	1067110672	456.69	6201.42	456.69	6020.00
CO	HOV	NB	4	1067210673	140.21	1563.11	140.21	1897.61
CO	HOV	NB	4	1067310674	836.27	8753.77	836.27	11843.69
CO	HOV	NB	5	1067410675	232.81	1731.87	232.81	1920.39
CO	HOV	NB	5	1067510676	1446.84	9039.88	1446.84	12250.75
CO	HOV	NB	5	1067610677	134.65	948.98	134.65	1191.97

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	HOV	NB	5	1067710678	44.88	298.74	44.88	397.32
CO	HOV	NB	5	1067810679	256.90	1911.03	256.90	2119.05
CO	HOV	NB	5	1067910680	594.38	4194.30	594.38	5032.74
CO	HOV	NB	5	1068010681	31.28	220.75	31.28	264.88
CO	HOV	NB	5	1068110682	239.38	1593.30	239.38	2119.05
CO	HOV	NB	5	1068210683	1092.17	7269.43	1092.17	9668.16
CO	HOV	NB	5	1068310684	368.72	2394.68	368.72	3178.57
CO	HOV	NB	5	1068410685	229.12	2007.51	229.12	2052.83
CO	HOV	NB	5	1068510686	1181.94	7866.92	1181.94	10462.80
CO	HOV	SB	1	1554815549	153.93	1078.65	153.93	1556.87
CO	HOV	SB	1	1554915550	59.73	360.49	59.73	541.52
CO	HOV	SB	1	1555015551	74.51	397.87	74.51	744.59
CO	HOV	SB	1	1555115552	69.54	409.63	69.54	676.90
CO	HOV	SB	1	1555215553	139.08	819.26	139.08	1353.80
CO	HOV	SB	1	1555315554	69.54	409.63	69.54	676.90
CO	HOV	SB	1	1555415555	92.16	555.07	92.16	879.97
CO	HOV	SB	1	1555515556	92.16	555.07	92.16	879.97
CO	HOV	SB	1	1555615557	35.45	213.49	35.45	338.45
CO	HOV	SB	1	1555715558	474.99	2860.73	474.99	4535.23
CO	HOV	SB	1	1555815559	191.41	1152.83	191.41	1827.63
CO	HOV	SB	1	1555915560	35.45	189.54	35.45	338.45
CO	HOV	SB	1	1556015561	992.51	5307.20	992.51	9476.61
CO	HOV	SB	1	1556115562	72.80	426.97	72.80	676.90
CO	HOV	SB	1	1556215563	436.79	2561.84	436.79	4061.40
CO	HOV	SB	1	1556315564	144.59	957.74	144.59	1218.42
CO	HOV	SB	2	1551715518	708.16	1643.42	709.00	1317.26
CO	HOV	SB	2	1551815519	884.46	1762.23	1063.50	1975.90
CO	HOV	SB	2	1551915520	589.64	1174.82	709.00	1317.26
CO	HOV	SB	2	1552015521	294.82	587.41	354.50	658.63
CO	HOV	SB	2	1552115522	294.82	587.41	354.50	658.63
CO	HOV	SB	2	1552215523	589.64	1174.82	709.00	1317.26
CO	HOV	SB	2	1552315524	294.82	694.60	354.50	658.63
CO	HOV	SB	2	1552415525	589.64	1389.20	709.00	1317.26
CO	HOV	SB	2	1552515526	884.46	2083.80	1063.50	1975.90
CO	HOV	SB	2	1552615529	840.58	1609.43	957.15	1778.31
CO	HOV	SB	2	1552915530	217.93	417.26	248.15	461.04
CO	HOV	SB	2	1553015531	217.93	417.26	248.15	461.04
CO	HOV	SB	2	1553115532	840.58	1602.75	957.15	1778.31
CO	HOV	SB	2	1553215533	466.99	890.41	531.75	987.95
CO	HOV	SB	2	1553315534	328.14	591.84	354.50	658.63
CO	HOV	SB	2	1553415535	328.14	591.84	354.50	658.63
CO	HOV	SB	2	1553515536	328.14	591.84	354.50	658.63
CO	HOV	SB	2	1553615537	656.28	1447.29	709.00	1317.26
CO	HOV	SB	2	1553715538	328.14	556.20	354.50	658.63

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	HOV	SB	2	1553815539	164.07	295.92	177.25	329.32
CO	HOV	SB	2	1553915540	249.06	578.91	283.60	526.91
CO	HOV	SB	2	1554015541	311.32	723.64	354.50	658.63
CO	HOV	SB	2	1554115542	155.66	361.82	177.25	329.32
CO	HOV	SB	2	1554215543	342.46	796.01	389.95	724.50
CO	HOV	SB	2	1554315544	622.65	1183.68	709.00	1317.26
CO	HOV	SB	2	1554415545	622.65	1183.68	709.00	1317.26
CO	HOV	SB	2	1554515546	311.32	591.84	354.50	658.63
CO	HOV	SB	2	1554615547	984.43	1775.52	1063.50	1975.90
CO	HOV	SB	2	1554715548	349.83	475.78	354.50	658.63
CO	HOV	SB	2	1565915517	495.71	1150.39	496.30	922.09
CO	HOV	SB	2	1572415659	388.69	704.89	425.40	790.36
CO	HOV	SB	3	1070610707	207.23	159.88	259.87	159.88
CO	HOV	SB	3	1070715701	562.48	439.96	705.35	439.96
CO	HOV	SB	3	1349515702	2100.88	1635.79	2784.28	1635.79
CO	HOV	SB	3	1570113495	560.24	456.81	742.47	456.81
CO	HOV	SB	3	1570215703	786.15	604.95	1002.34	604.95
CO	HOV	SB	3	1570315704	3639.59	2556.44	4640.47	2556.44
CO	HOV	SB	3	1570415705	710.50	548.17	890.97	548.17
CO	HOV	SB	3	1570515706	5490.31	4274.86	7276.25	4274.86
CO	HOV	SB	3	1570615707	1984.47	1526.74	2598.66	1526.74
CO	HOV	SB	3	1570715709	2038.17	1568.38	2598.66	1568.38
CO	HOV	SB	3	1570915710	611.45	470.51	779.60	470.51
CO	HOV	SB	3	1571015711	1193.78	918.62	1522.07	918.62
CO	HOV	SB	3	1571115713	1998.55	1574.77	2858.53	1574.77
CO	HOV	SB	3	1571315714	207.64	163.61	296.99	163.61
CO	HOV	SB	3	1571415715	425.24	342.60	556.86	342.60
CO	HOV	SB	3	1571515716	340.19	274.08	445.48	274.08
CO	HOV	SB	3	1571615717	752.70	649.76	1076.59	649.76
CO	HOV	SB	3	1571715718	233.60	201.65	334.11	201.65
CO	HOV	SB	3	1571815719	481.94	409.13	631.10	409.13
CO	HOV	SB	3	1571915720	3503.96	2554.44	5011.70	2554.44
CO	HOV	SB	3	1572015721	2206.19	1608.35	3155.52	1608.35
CO	HOV	SB	3	1572115722	331.03	223.96	519.73	223.96
CO	HOV	SB	3	1572215723	118.22	79.98	185.62	79.98
CO	HOV	SB	3	1572315724	472.90	319.94	742.47	319.94
CO	HOV	SB	4	1070110702	5687.40	2860.65	6739.61	2860.65
CO	HOV	SB	4	1070210703	964.42	483.14	1110.92	483.14
CO	HOV	SB	4	1070310704	3200.69	1693.83	3369.80	1693.83
CO	HOV	SB	4	1070410705	851.41	442.45	851.71	442.45
CO	HOV	SB	4	1070510706	899.70	453.90	851.71	453.90
CO	HOV	SB	5	1068910690	6259.84	4251.24	5628.35	4251.24
CO	HOV	SB	5	1069010691	1370.69	908.07	1097.35	908.07
CO	HOV	SB	5	1069110692	1677.92	1237.50	1699.12	1237.50

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
CO	HOV	SB	5	1069210693	5267.06	3930.39	5203.57	3930.39
CO	HOV	SB	5	1069310694	1110.74	828.86	1097.35	828.86
CO	HOV	SB	5	1069410695	161.52	114.05	141.59	114.05
CO	HOV	SB	5	1069510696	3149.68	2284.81	2761.08	2284.81
CO	HOV	SB	5	1069610697	1211.42	855.34	1061.95	855.34
CO	HOV	SB	5	1069710698	242.28	152.07	212.39	152.07
CO	HOV	SB	5	1069810699	680.78	469.91	672.57	469.91
CO	HOV	SB	5	1069910700	6784.48	5389.81	6513.31	5389.81
CO	HOV	SB	5	1070010701	1130.66	820.19	991.16	820.19
NOx	GP	NB	1	27692822	319.62	253.15	309.36	253.15
NOx	GP	NB	1	27702771	640.97	506.31	637.35	506.31
NOx	GP	NB	1	27712772	640.97	506.31	637.35	506.31
NOx	GP	NB	1	27722773	576.88	455.68	573.62	455.68
NOx	GP	NB	1	27732831	587.92	458.57	566.30	458.57
NOx	GP	NB	1	27742775	641.36	500.26	617.78	500.26
NOx	GP	NB	1	27752776	426.90	333.51	406.71	333.51
NOx	GP	NB	1	27762778	469.59	366.86	447.38	366.86
NOx	GP	NB	1	27782779	298.83	233.46	284.69	233.46
NOx	GP	NB	1	27792780	631.80	507.11	612.32	507.11
NOx	GP	NB	1	28222825	1730.63	1548.29	1720.85	1548.29
NOx	GP	NB	1	28252770	3835.49	3037.86	3712.31	3037.86
NOx	GP	NB	1	28312774	1068.94	833.77	1029.64	833.77
NOx	GP	NB	1	36403641	490.51	401.63	484.52	401.63
NOx	GP	NB	1	36413711	3204.87	2818.26	3166.84	2818.26
NOx	GP	NB	1	36422769	8949.47	7088.34	8662.07	7088.34
NOx	GP	NB	1	36933640	981.02	803.25	969.03	803.25
NOx	GP	NB	1	37113642	534.14	469.71	527.81	469.71
NOx	GP	NB	2	27802783	559.77	444.82	548.20	434.08
NOx	GP	NB	2	27838877	1119.55	889.63	1096.39	868.15
NOx	GP	NB	2	27852844	1959.21	1677.68	1932.48	1631.06
NOx	GP	NB	2	27862849	1679.32	1334.45	1653.79	1312.17
NOx	GP	NB	2	27872788	1217.36	1078.51	1217.86	1043.10
NOx	GP	NB	2	27882796	412.82	333.61	406.80	328.04
NOx	GP	NB	2	27962797	825.64	667.23	813.60	656.09
NOx	GP	NB	2	27972798	825.64	667.23	813.60	656.09
NOx	GP	NB	2	27982799	1238.46	1000.84	1220.41	984.13
NOx	GP	NB	2	27992800	1376.07	1123.24	1352.99	1099.61
NOx	GP	NB	2	28002854	405.79	333.61	405.95	327.05
NOx	GP	NB	2	28012803	2191.24	1819.65	2197.04	1786.79
NOx	GP	NB	2	28032804	2434.71	2021.83	2441.16	1985.32
NOx	GP	NB	2	28042805	1642.94	1343.14	1622.02	1319.06
NOx	GP	NB	2	28052806	822.21	665.38	812.78	654.34
NOx	GP	NB	2	28062807	1644.42	1330.76	1625.56	1308.68
NOx	GP	NB	2	28072808	822.21	665.38	812.78	654.34

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	GP	NB	2	28083053	822.21	665.38	812.78	654.34
NOx	GP	NB	2	28392785	1959.21	1677.68	1932.48	1631.06
NOx	GP	NB	2	28432786	419.83	333.61	413.45	328.04
NOx	GP	NB	2	28442843	923.63	733.95	909.58	721.69
NOx	GP	NB	2	28498841	608.68	539.26	608.93	521.55
NOx	GP	NB	2	28542801	405.79	333.61	405.95	327.05
NOx	GP	NB	2	30532809	1644.42	1330.76	1625.56	1308.68
NOx	GP	NB	2	31613162	821.47	687.14	801.99	664.21
NOx	GP	NB	2	31623066	1424.54	1108.97	1438.48	1087.26
NOx	GP	NB	2	88412787	541.05	479.34	541.27	463.60
NOx	GP	NB	2	88772839	732.90	667.23	706.91	656.09
NOx	GP	NB	2	121733161	1880.40	1463.83	1903.02	1439.55
NOx	GP	NB	2	280912173	575.55	465.77	568.95	458.04
NOx	GP	NB	3	28752878	478.76	557.52	478.76	526.26
NOx	GP	NB	3	28783168	478.76	557.52	478.76	526.26
NOx	GP	NB	3	28863164	2520.16	3360.83	2520.16	3072.16
NOx	GP	NB	3	28873163	196.89	260.45	196.89	242.88
NOx	GP	NB	3	30662887	787.55	1041.79	787.55	971.52
NOx	GP	NB	3	31632886	393.77	520.89	393.77	485.76
NOx	GP	NB	3	31672875	1149.02	1338.04	1149.02	1240.73
NOx	GP	NB	3	31683124	574.51	625.07	574.51	589.77
NOx	GP	NB	3	41094111	3333.05	4187.02	3333.05	3970.54
NOx	GP	NB	3	41115274	9745.40	11004.07	9745.40	10541.18
NOx	GP	NB	3	52415246	1031.90	1279.49	1031.90	1162.76
NOx	GP	NB	3	52465244	412.76	511.80	412.76	456.90
NOx	GP	NB	3	52735470	5984.48	6968.97	5984.48	6578.19
NOx	GP	NB	3	52745273	1149.46	1471.42	1149.46	1337.17
NOx	GP	NB	3	54705471	1399.34	1791.29	1399.34	1627.86
NOx	GP	NB	3	145174109	4308.83	5017.66	4308.83	4736.30
NOx	GP	NB	3	156553167	651.11	758.22	651.11	703.08
NOx	GP	NB	3	178515241	928.71	1151.54	928.71	1046.48
NOx	GP	NB	3	312414514	4481.18	4875.55	4481.18	4600.20
NOx	GP	NB	3	316415655	4221.26	5629.39	4221.26	5145.87
NOx	GP	NB	3	547117851	4437.90	5011.08	4437.90	4856.76
NOx	GP	NB	3	1451414515	1079.72	1356.36	1079.72	1286.23
NOx	GP	NB	3	1451514517	938.89	1179.44	938.89	1118.46
NOx	GP	NB	4	52385271	1527.02	1269.58	1527.02	1171.68
NOx	GP	NB	4	52445238	1270.53	1015.67	1270.53	926.05
NOx	GP	NB	4	54695472	2500.48	1837.39	2500.48	1764.84
NOx	GP	NB	4	54725473	14715.45	10096.32	14715.45	9693.30
NOx	GP	NB	4	178545469	5584.40	4103.51	5584.40	3941.47
NOx	GP	NB	4	527117854	1832.42	1523.50	1832.42	1406.02
NOx	GP	NB	5	54735479	3366.93	2488.10	3366.93	2497.18
NOx	GP	NB	5	54745475	2014.16	1520.53	2014.16	1462.18

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	GP	NB	5	54755476	1167.66	755.53	1167.66	730.22
NOx	GP	NB	5	54768593	3591.40	2653.97	3591.40	2663.66
NOx	GP	NB	5	54795474	17547.16	12832.00	17547.16	12342.55
NOx	GP	NB	5	69596960	538.71	398.10	538.71	401.74
NOx	GP	NB	5	69606961	3853.27	2493.25	3853.27	2409.73
NOx	GP	NB	5	69619599	18215.48	11786.28	18215.48	11453.91
NOx	GP	NB	5	69626963	3059.70	2489.65	3059.70	2367.60
NOx	GP	NB	5	69636964	18127.45	13599.55	18127.45	13216.05
NOx	GP	NB	5	85936959	10370.16	7663.34	10370.16	7733.48
NOx	GP	NB	5	95996962	8077.61	6572.68	8077.61	6284.73
NOx	GP	SB	1	27823139	246.54	355.69	246.54	343.27
NOx	GP	SB	1	28242827	1566.77	2163.28	1566.77	2056.80
NOx	GP	SB	1	28273144	290.14	389.27	290.14	368.89
NOx	GP	SB	1	28282824	4535.90	6262.83	4535.90	5997.41
NOx	GP	SB	1	28303143	880.10	1215.18	880.10	1163.68
NOx	GP	SB	1	28363140	440.25	635.16	440.25	622.49
NOx	GP	SB	1	29372782	637.78	1054.37	637.78	973.45
NOx	GP	SB	1	31392836	387.42	558.94	387.42	539.43
NOx	GP	SB	1	31403141	880.50	1270.32	880.50	1244.97
NOx	GP	SB	1	31413142	440.25	635.16	440.25	622.49
NOx	GP	SB	1	31422830	585.03	867.98	585.03	816.95
NOx	GP	SB	1	31432828	338.50	467.38	338.50	447.57
NOx	GP	SB	1	31443701	8124.01	10899.51	8124.01	10328.91
NOx	GP	SB	1	37013975	483.57	667.68	483.57	628.42
NOx	GP	SB	1	39753976	2901.43	4006.07	2901.43	3770.54
NOx	GP	SB	1	39763653	830.45	1073.10	830.45	1025.62
NOx	GP	SB	2	27812937	456.55	306.14	439.24	291.79
NOx	GP	SB	2	27892790	718.13	511.97	704.99	504.05
NOx	GP	SB	2	27902791	1141.38	865.72	1108.21	847.70
NOx	GP	SB	2	27912792	598.44	426.64	583.94	418.86
NOx	GP	SB	2	27922793	285.34	180.07	277.05	217.99
NOx	GP	SB	2	27932794	574.51	345.74	563.99	419.72
NOx	GP	SB	2	27942795	718.13	432.18	704.99	524.65
NOx	GP	SB	2	27953145	359.07	216.09	352.49	262.32
NOx	GP	SB	2	28402781	2154.39	1548.45	2114.97	1484.04
NOx	GP	SB	2	28413147	1675.64	1008.41	1652.08	1226.63
NOx	GP	SB	2	28523156	718.13	511.97	704.99	504.05
NOx	GP	SB	2	28533155	1369.65	1038.87	1337.94	1020.09
NOx	GP	SB	2	28553154	387.38	252.10	373.60	305.19
NOx	GP	SB	2	28572855	1849.03	1395.80	1806.22	1370.69
NOx	GP	SB	2	28718230	663.88	514.53	634.42	501.83
NOx	GP	SB	2	28722873	1327.75	1021.26	1288.32	1005.55
NOx	GP	SB	2	28733051	1991.63	1531.88	1932.47	1508.32
NOx	GP	SB	2	30493050	1327.75	1021.26	1288.32	1005.55

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	GP	SB	2	30503151	805.45	600.29	803.28	590.77
NOx	GP	SB	2	30513052	1327.75	1021.26	1288.32	1005.55
NOx	GP	SB	2	30523150	663.88	510.63	644.16	502.77
NOx	GP	SB	2	31453146	789.94	475.39	775.49	577.11
NOx	GP	SB	2	31462841	1675.64	1008.41	1652.08	1226.63
NOx	GP	SB	2	31472840	837.82	504.21	826.04	613.31
NOx	GP	SB	2	31503049	663.88	510.63	644.16	502.77
NOx	GP	SB	2	31513152	1610.91	1200.58	1606.55	1181.53
NOx	GP	SB	2	31522857	2416.36	1800.86	2409.83	1772.30
NOx	GP	SB	2	31542853	387.38	252.10	373.60	305.19
NOx	GP	SB	2	31552852	1027.24	779.15	1003.46	765.07
NOx	GP	SB	2	31562789	718.13	511.97	704.99	504.05
NOx	GP	SB	2	82302872	743.44	547.67	723.27	542.18
NOx	GP	SB	3	28602861	642.34	388.88	616.84	388.88
NOx	GP	SB	3	28612862	642.34	388.88	616.84	388.88
NOx	GP	SB	3	28638657	873.58	568.88	826.71	568.88
NOx	GP	SB	3	28672868	3699.93	2205.28	3444.80	2205.28
NOx	GP	SB	3	28682869	578.11	344.57	546.19	344.57
NOx	GP	SB	3	28692870	289.06	172.29	273.09	172.29
NOx	GP	SB	3	28702871	1156.23	689.15	1092.37	689.15
NOx	GP	SB	3	41084113	4367.91	2799.41	4194.48	2799.41
NOx	GP	SB	3	52475242	1097.83	690.07	1044.51	690.07
NOx	GP	SB	3	52665247	548.91	349.38	522.26	349.38
NOx	GP	SB	3	52675268	1734.32	1129.40	1665.46	1129.40
NOx	GP	SB	3	52685269	8029.24	5228.69	7710.44	5228.69
NOx	GP	SB	3	52695270	1578.12	991.98	1523.63	991.98
NOx	GP	SB	3	52704108	12734.37	8027.71	12374.99	8027.71
NOx	GP	SB	3	86572867	6243.62	3721.40	5813.09	3721.40
NOx	GP	SB	3	89982863	513.87	334.64	486.30	334.64
NOx	GP	SB	3	145112860	720.59	466.66	702.08	466.66
NOx	GP	SB	3	178128998	565.26	368.10	534.93	368.10
NOx	GP	SB	3	178525267	5955.77	3933.42	5843.75	3933.42
NOx	GP	SB	3	286217812	873.58	568.88	826.71	568.88
NOx	GP	SB	3	411314509	4203.46	2928.07	4056.18	2928.07
NOx	GP	SB	3	524217852	1156.21	741.02	1110.30	741.02
NOx	GP	SB	3	1450914512	1261.04	878.42	1216.85	878.42
NOx	GP	SB	3	1451014511	5548.57	3593.28	5406.02	3593.28
NOx	GP	SB	3	1451214510	2697.82	1756.84	2590.71	1756.84
NOx	GP	SB	4	52395266	984.24	714.46	954.96	714.46
NOx	GP	SB	4	52635264	1895.30	1598.40	1873.57	1598.40
NOx	GP	SB	4	52645265	5502.47	4640.52	5439.41	4640.52
NOx	GP	SB	4	52655239	1162.54	844.35	1150.09	844.35
NOx	GP	SB	4	54805263	10400.99	7601.54	10030.29	7601.54
NOx	GP	SB	5	54785480	2236.99	2990.42	2270.25	2990.42

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	GP	SB	5	54815567	959.61	1170.46	963.51	1170.46
NOx	GP	SB	5	55675568	1791.40	2138.73	1774.13	2138.73
NOx	GP	SB	5	55685478	15211.53	20334.88	15465.67	20334.88
NOx	GP	SB	5	69686987	13409.02	16040.44	13250.61	16040.44
NOx	GP	SB	5	69837280	2388.53	2851.63	2361.24	2851.63
NOx	GP	SB	5	69848592	7388.99	9012.56	7419.01	9012.56
NOx	GP	SB	5	69876989	2311.29	2673.41	2301.05	2673.41
NOx	GP	SB	5	69899598	5003.76	6063.57	4946.47	6063.57
NOx	GP	SB	5	72806984	383.84	478.47	385.40	478.47
NOx	GP	SB	5	85925481	2311.56	3090.10	2345.93	3090.10
NOx	GP	SB	5	95986983	11644.10	13901.72	11531.87	13901.72
NOx	HOV	NB	1	1558615587	212.19	74.52	199.89	74.52
NOx	HOV	NB	1	1558715588	106.10	37.26	99.94	37.26
NOx	HOV	NB	1	1558815590	561.53	208.23	599.66	208.23
NOx	HOV	NB	1	1559015591	87.42	35.34	99.94	35.34
NOx	HOV	NB	1	1559115592	1145.67	494.79	1399.21	494.79
NOx	HOV	NB	1	1559215593	40.92	17.67	49.97	17.67
NOx	HOV	NB	1	1559315594	236.03	93.70	269.85	93.70
NOx	HOV	NB	1	1559415595	491.00	212.05	599.66	212.05
NOx	HOV	NB	1	1559515596	81.83	34.70	99.94	34.70
NOx	HOV	NB	1	1559615597	81.83	34.70	99.94	34.70
NOx	HOV	NB	1	1559715598	73.65	31.23	89.95	31.23
NOx	HOV	NB	1	1559815599	81.88	30.55	99.94	30.55
NOx	HOV	NB	1	1559915600	163.77	61.11	199.89	61.11
NOx	HOV	NB	1	1560015601	98.26	36.66	119.93	36.66
NOx	HOV	NB	1	1560115602	81.88	30.55	99.94	30.55
NOx	HOV	NB	1	1560215603	101.06	35.67	109.94	35.67
NOx	HOV	NB	1	1560315604	64.31	22.70	69.96	22.70
NOx	HOV	NB	1	1560415605	132.99	49.33	149.92	49.33
NOx	HOV	NB	2	1560515606	93.90	89.26	93.78	94.06
NOx	HOV	NB	2	1560615607	187.80	178.51	187.56	188.12
NOx	HOV	NB	2	1560715609	90.36	82.31	93.78	94.06
NOx	HOV	NB	2	1560915610	182.31	164.62	187.56	188.12
NOx	HOV	NB	2	1561015611	182.31	164.62	187.56	188.12
NOx	HOV	NB	2	1561115612	100.50	90.54	103.16	103.47
NOx	HOV	NB	2	1561215613	45.68	41.15	46.89	47.03
NOx	HOV	NB	2	1561315614	182.72	164.62	187.56	188.12
NOx	HOV	NB	2	1561415615	81.33	80.33	84.40	84.66
NOx	HOV	NB	2	1561515616	72.29	66.55	75.02	75.25
NOx	HOV	NB	2	1561615617	154.96	151.74	159.42	159.90
NOx	HOV	NB	2	1561715618	54.22	49.39	56.27	56.44
NOx	HOV	NB	2	1561815619	90.36	82.31	93.78	94.06
NOx	HOV	NB	2	1561915620	90.36	82.31	93.78	94.06
NOx	HOV	NB	2	1562015621	135.54	123.46	140.67	141.09

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	HOV	NB	2	1562115622	237.00	214.01	243.82	244.56
NOx	HOV	NB	2	1562215623	54.69	49.39	56.27	56.44
NOx	HOV	NB	2	1562315624	54.69	49.39	56.27	56.44
NOx	HOV	NB	2	1562415627	246.12	225.72	253.20	253.97
NOx	HOV	NB	2	1562715628	273.47	250.80	281.33	282.19
NOx	HOV	NB	2	1562815629	182.26	162.39	187.56	188.12
NOx	HOV	NB	2	1562915630	94.64	82.07	93.78	94.06
NOx	HOV	NB	2	1563015631	189.27	164.15	187.56	188.12
NOx	HOV	NB	2	1563115632	94.64	82.07	93.78	94.06
NOx	HOV	NB	2	1563215633	94.64	82.07	93.78	94.06
NOx	HOV	NB	2	1563315634	189.27	164.15	187.56	188.12
NOx	HOV	NB	2	1563415635	283.91	246.22	281.33	282.19
NOx	HOV	NB	2	1563515726	222.65	186.31	187.56	188.12
NOx	HOV	NB	2	1572615727	189.27	164.15	187.56	188.12
NOx	HOV	NB	3	1349415732	64.07	135.29	64.07	182.28
NOx	HOV	NB	3	1349615746	77.20	152.37	77.20	214.45
NOx	HOV	NB	3	1572715728	50.22	120.46	50.22	214.45
NOx	HOV	NB	3	1572815729	12.56	30.11	12.56	53.61
NOx	HOV	NB	3	1572915730	40.18	96.37	40.18	171.56
NOx	HOV	NB	3	1573015731	239.49	505.93	239.49	900.69
NOx	HOV	NB	3	1573113494	384.90	813.10	384.90	1447.54
NOx	HOV	NB	3	1573215733	139.46	240.17	139.46	396.73
NOx	HOV	NB	3	1573315734	46.32	91.42	46.32	128.67
NOx	HOV	NB	3	1573415735	57.90	114.28	57.90	160.84
NOx	HOV	NB	3	1573515736	23.88	42.16	23.88	75.06
NOx	HOV	NB	3	1573615737	266.06	469.79	266.06	836.35
NOx	HOV	NB	3	1573715738	79.62	166.28	79.62	257.34
NOx	HOV	NB	3	1573815739	59.71	124.71	59.71	193.00
NOx	HOV	NB	3	1573915740	298.56	542.06	298.56	965.02
NOx	HOV	NB	3	1574015741	275.87	478.05	275.87	739.85
NOx	HOV	NB	3	1574115742	716.58	1282.94	716.58	2090.88
NOx	HOV	NB	3	1574215743	92.64	182.85	92.64	257.34
NOx	HOV	NB	3	1574315744	499.76	811.39	499.76	1340.31
NOx	HOV	NB	3	1574415745	108.08	213.32	108.08	300.23
NOx	HOV	NB	3	1574513496	271.93	486.86	271.93	793.46
NOx	HOV	NB	3	1574616411	73.34	144.75	73.34	203.73
NOx	HOV	NB	3	1641110669	33.85	53.33	33.85	75.06
NOx	HOV	NB	4	1066910670	108.60	252.11	108.60	246.33
NOx	HOV	NB	4	1067010671	83.05	226.19	83.05	235.62
NOx	HOV	NB	4	1067110672	347.30	964.84	347.30	985.33
NOx	HOV	NB	4	1067210673	104.26	247.25	104.26	310.59
NOx	HOV	NB	4	1067310674	587.94	1505.42	587.94	1938.53
NOx	HOV	NB	5	1067410675	105.94	247.54	105.94	286.89
NOx	HOV	NB	5	1067510676	648.16	1452.55	648.16	1830.19

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	HOV	NB	5	1067610677	57.93	146.80	57.93	178.07
NOx	HOV	NB	5	1067710678	19.31	46.96	19.31	59.36
NOx	HOV	NB	5	1067810679	116.90	273.15	116.90	316.57
NOx	HOV	NB	5	1067910680	266.27	613.50	266.27	751.86
NOx	HOV	NB	5	1068010681	14.01	32.29	14.01	39.57
NOx	HOV	NB	5	1068110682	102.99	250.44	102.99	316.57
NOx	HOV	NB	5	1068210683	469.91	1142.65	469.91	1444.37
NOx	HOV	NB	5	1068310684	158.31	380.67	158.31	474.86
NOx	HOV	NB	5	1068410685	98.17	282.02	98.17	306.68
NOx	HOV	NB	5	1068510686	508.54	1236.56	508.54	1563.08
NOx	HOV	SB	1	1554815549	92.73	157.03	92.73	244.42
NOx	HOV	SB	1	1554915550	39.24	53.85	39.24	85.01
NOx	HOV	SB	1	1555015551	45.17	67.69	45.17	116.89
NOx	HOV	SB	1	1555115552	42.18	65.42	42.18	106.27
NOx	HOV	SB	1	1555215553	84.36	130.83	84.36	212.54
NOx	HOV	SB	1	1555315554	42.18	65.42	42.18	106.27
NOx	HOV	SB	1	1555415555	58.82	83.87	58.82	138.15
NOx	HOV	SB	1	1555515556	58.82	83.87	58.82	138.15
NOx	HOV	SB	1	1555615557	22.62	32.26	22.62	53.13
NOx	HOV	SB	1	1555715558	303.12	432.27	303.12	711.99
NOx	HOV	SB	1	1555815559	122.15	174.20	122.15	286.92
NOx	HOV	SB	1	1555915560	22.62	31.42	22.62	53.13
NOx	HOV	SB	1	1556015561	633.39	879.70	633.39	1487.75
NOx	HOV	SB	1	1556115562	47.42	64.52	47.42	106.27
NOx	HOV	SB	1	1556215563	284.51	387.11	284.51	637.61
NOx	HOV	SB	1	1556315564	105.87	141.29	105.87	191.28
NOx	HOV	SB	2	1551715518	206.72	212.91	217.39	182.03
NOx	HOV	SB	2	1551815519	258.27	262.42	326.08	273.05
NOx	HOV	SB	2	1551915520	172.18	174.94	217.39	182.03
NOx	HOV	SB	2	1552015521	86.09	87.47	108.69	91.02
NOx	HOV	SB	2	1552115522	86.09	87.47	108.69	91.02
NOx	HOV	SB	2	1552215523	172.18	174.94	217.39	182.03
NOx	HOV	SB	2	1552315524	86.09	92.87	108.69	91.02
NOx	HOV	SB	2	1552415525	172.18	185.74	217.39	182.03
NOx	HOV	SB	2	1552515526	258.27	278.61	326.08	273.05
NOx	HOV	SB	2	1552615529	242.97	238.33	293.48	245.74
NOx	HOV	SB	2	1552915530	62.99	61.79	76.09	63.71
NOx	HOV	SB	2	1553015531	62.99	61.79	76.09	63.71
NOx	HOV	SB	2	1553115532	242.97	237.18	293.48	245.74
NOx	HOV	SB	2	1553215533	134.98	131.77	163.04	136.52
NOx	HOV	SB	2	1553315534	94.67	86.95	108.69	91.02
NOx	HOV	SB	2	1553415535	94.67	86.95	108.69	91.02
NOx	HOV	SB	2	1553515536	94.67	86.95	108.69	91.02
NOx	HOV	SB	2	1553615537	189.34	188.34	217.39	182.03

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	HOV	SB	2	1553715538	94.67	76.50	108.69	91.02
NOx	HOV	SB	2	1553815539	47.34	43.47	54.35	45.51
NOx	HOV	SB	2	1553915540	71.99	75.34	86.96	72.81
NOx	HOV	SB	2	1554015541	89.99	94.17	108.69	91.02
NOx	HOV	SB	2	1554115542	44.99	47.09	54.35	45.51
NOx	HOV	SB	2	1554215543	98.99	103.59	119.56	100.12
NOx	HOV	SB	2	1554315544	179.98	173.89	217.39	182.03
NOx	HOV	SB	2	1554415545	179.98	173.89	217.39	182.03
NOx	HOV	SB	2	1554515546	89.99	86.95	108.69	91.02
NOx	HOV	SB	2	1554615547	284.01	260.84	326.08	273.05
NOx	HOV	SB	2	1554715548	102.04	72.56	108.69	91.02
NOx	HOV	SB	2	1565915517	144.71	149.04	152.17	127.42
NOx	HOV	SB	2	1572415659	112.42	104.97	130.43	109.22
NOx	HOV	SB	3	1070610707	68.67	22.71	87.23	22.71
NOx	HOV	SB	3	1070715701	186.39	62.59	236.78	62.59
NOx	HOV	SB	3	1349515702	676.34	229.51	934.64	229.51
NOx	HOV	SB	3	1570113495	180.36	64.88	249.24	64.88
NOx	HOV	SB	3	1570215703	252.22	84.18	336.47	84.18
NOx	HOV	SB	3	1570315704	1167.69	356.52	1557.74	356.52
NOx	HOV	SB	3	1570415705	235.44	77.86	299.09	77.86
NOx	HOV	SB	3	1570515706	1767.49	599.80	2442.53	599.80
NOx	HOV	SB	3	1570615707	640.01	214.21	872.33	214.21
NOx	HOV	SB	3	1570715709	653.91	218.26	872.33	218.26
NOx	HOV	SB	3	1570915710	196.17	65.48	261.70	65.48
NOx	HOV	SB	3	1571015711	383.00	127.84	510.94	127.84
NOx	HOV	SB	3	1571115713	633.09	219.61	959.57	219.61
NOx	HOV	SB	3	1571315714	65.78	22.82	99.70	22.82
NOx	HOV	SB	3	1571415715	137.14	48.66	186.93	48.66
NOx	HOV	SB	3	1571515716	109.72	38.93	149.54	38.93
NOx	HOV	SB	3	1571615717	238.44	90.42	361.39	90.42
NOx	HOV	SB	3	1571715718	74.00	28.06	112.16	28.06
NOx	HOV	SB	3	1571815719	155.43	58.17	211.85	58.17
NOx	HOV	SB	3	1571915720	1109.97	362.09	1682.36	362.09
NOx	HOV	SB	3	1572015721	698.87	227.98	1059.26	227.98
NOx	HOV	SB	3	1572115722	105.17	35.20	174.47	35.20
NOx	HOV	SB	3	1572215723	37.56	12.57	62.31	12.57
NOx	HOV	SB	3	1572315724	150.24	50.28	249.24	50.28
NOx	HOV	SB	4	1070110702	1616.25	386.11	2019.16	386.11
NOx	HOV	SB	4	1070210703	273.98	64.45	332.83	64.45
NOx	HOV	SB	4	1070310704	894.08	222.25	1009.58	222.25
NOx	HOV	SB	4	1070410705	240.51	59.07	255.17	59.07
NOx	HOV	SB	4	1070510706	258.99	60.66	255.17	60.66
NOx	HOV	SB	5	1068910690	1684.42	503.13	1593.62	503.13
NOx	HOV	SB	5	1069010691	366.47	105.31	310.71	105.31

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
NOx	HOV	SB	5	1069110692	466.26	146.48	481.09	146.48
NOx	HOV	SB	5	1069210693	1439.91	465.16	1473.35	465.16
NOx	HOV	SB	5	1069310694	303.65	98.09	310.71	98.09
NOx	HOV	SB	5	1069410695	43.19	13.37	40.09	13.37
NOx	HOV	SB	5	1069510696	842.25	264.99	781.78	264.99
NOx	HOV	SB	5	1069610697	323.94	100.31	300.68	100.31
NOx	HOV	SB	5	1069710698	64.79	18.27	60.14	18.27
NOx	HOV	SB	5	1069810699	186.11	57.20	190.43	57.20
NOx	HOV	SB	5	1069910700	1851.63	625.09	1844.19	625.09
NOx	HOV	SB	5	1070010701	302.35	95.12	280.64	95.12
PM2.5	GP	NB	1	27692822	7.71	5.59	7.47	5.59
PM2.5	GP	NB	1	27702771	15.39	11.17	14.94	11.17
PM2.5	GP	NB	1	27712772	15.39	11.17	14.94	11.17
PM2.5	GP	NB	1	27722773	13.85	10.06	13.44	10.06
PM2.5	GP	NB	1	27732831	14.11	10.24	13.59	10.24
PM2.5	GP	NB	1	27742775	15.39	11.17	14.83	11.17
PM2.5	GP	NB	1	27752776	10.28	7.45	9.81	7.45
PM2.5	GP	NB	1	27762778	11.31	8.19	10.79	8.19
PM2.5	GP	NB	1	27782779	7.20	5.21	6.87	5.21
PM2.5	GP	NB	1	27792780	15.40	11.17	14.72	11.17
PM2.5	GP	NB	1	28222825	41.54	30.17	40.33	30.17
PM2.5	GP	NB	1	28252770	92.50	67.05	89.68	67.05
PM2.5	GP	NB	1	28312774	25.66	18.62	24.71	18.62
PM2.5	GP	NB	1	36403641	10.27	7.45	9.80	7.45
PM2.5	GP	NB	1	36413711	76.93	55.87	74.21	55.87
PM2.5	GP	NB	1	36422769	215.83	156.45	209.25	156.45
PM2.5	GP	NB	1	36933640	20.54	14.90	19.60	14.90
PM2.5	GP	NB	1	37113642	12.82	9.31	12.37	9.31
PM2.5	GP	NB	2	27802783	12.86	10.64	12.65	10.40
PM2.5	GP	NB	2	27838877	25.72	21.28	25.29	20.80
PM2.5	GP	NB	2	27852844	45.00	37.26	44.58	36.78
PM2.5	GP	NB	2	27862849	38.57	31.92	38.15	31.43
PM2.5	GP	NB	2	27872788	28.82	23.95	28.48	23.52
PM2.5	GP	NB	2	27882796	9.64	7.98	9.54	7.86
PM2.5	GP	NB	2	27962797	19.29	15.96	19.07	15.72
PM2.5	GP	NB	2	27972798	19.29	15.96	19.07	15.72
PM2.5	GP	NB	2	27982799	28.93	23.94	28.61	23.58
PM2.5	GP	NB	2	27992800	32.14	26.66	31.72	26.18
PM2.5	GP	NB	2	28002854	9.61	7.98	9.49	7.83
PM2.5	GP	NB	2	28012803	51.88	43.19	51.37	42.53
PM2.5	GP	NB	2	28032804	57.64	47.99	57.08	47.26
PM2.5	GP	NB	2	28042805	38.47	31.98	38.04	31.50
PM2.5	GP	NB	2	28052806	19.20	15.95	18.98	15.71
PM2.5	GP	NB	2	28062807	38.40	31.90	37.96	31.41

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	GP	NB	2	28072808	19.20	15.95	18.98	15.71
PM2.5	GP	NB	2	28083053	19.20	15.95	18.98	15.71
PM2.5	GP	NB	2	28392785	45.00	37.26	44.58	36.78
PM2.5	GP	NB	2	28432786	9.64	7.98	9.54	7.86
PM2.5	GP	NB	2	28442843	21.22	17.56	20.98	17.29
PM2.5	GP	NB	2	28498841	14.41	11.98	14.24	11.76
PM2.5	GP	NB	2	28542801	9.61	7.98	9.49	7.83
PM2.5	GP	NB	2	30532809	38.40	31.90	37.96	31.41
PM2.5	GP	NB	2	31613162	19.23	16.04	18.81	15.56
PM2.5	GP	NB	2	31623066	32.02	26.59	31.60	26.10
PM2.5	GP	NB	2	88412787	12.81	10.65	12.66	10.45
PM2.5	GP	NB	2	88772839	19.29	15.96	19.08	15.72
PM2.5	GP	NB	2	121733161	42.27	35.09	41.80	34.55
PM2.5	GP	NB	2	280912173	13.44	11.17	13.29	10.99
PM2.5	GP	NB	3	28752878	8.66	12.40	8.66	11.58
PM2.5	GP	NB	3	28783168	8.66	12.40	8.66	11.58
PM2.5	GP	NB	3	28863164	55.45	79.47	55.45	72.90
PM2.5	GP	NB	3	28873163	4.33	6.19	4.33	5.78
PM2.5	GP	NB	3	30662887	17.33	24.78	17.33	23.13
PM2.5	GP	NB	3	31632886	8.66	12.39	8.66	11.57
PM2.5	GP	NB	3	31672875	20.79	29.76	20.79	27.31
PM2.5	GP	NB	3	31683124	10.40	14.87	10.40	14.04
PM2.5	GP	NB	3	41094111	61.51	88.05	61.51	82.24
PM2.5	GP	NB	3	41115274	168.95	241.81	168.95	225.87
PM2.5	GP	NB	3	52415246	17.33	24.80	17.33	23.17
PM2.5	GP	NB	3	52465244	6.93	9.92	6.93	9.10
PM2.5	GP	NB	3	52735470	108.30	155.01	108.30	144.79
PM2.5	GP	NB	3	52745273	19.93	28.52	19.93	26.64
PM2.5	GP	NB	3	54705471	24.26	34.72	24.26	32.43
PM2.5	GP	NB	3	145174109	77.98	111.61	77.98	104.25
PM2.5	GP	NB	3	156553167	11.78	16.86	11.78	15.48
PM2.5	GP	NB	3	178515241	15.60	22.32	15.60	20.85
PM2.5	GP	NB	3	312414514	81.10	115.96	81.10	109.54
PM2.5	GP	NB	3	316415655	92.88	133.11	92.88	122.10
PM2.5	GP	NB	3	547117851	76.94	110.12	76.94	104.07
PM2.5	GP	NB	3	1451414515	19.93	28.52	19.93	26.64
PM2.5	GP	NB	3	1451514517	17.33	24.80	17.33	23.17
PM2.5	GP	NB	4	52385271	23.90	23.12	23.90	22.06
PM2.5	GP	NB	4	52445238	19.12	18.50	19.12	17.43
PM2.5	GP	NB	4	54695472	43.02	41.59	43.02	40.02
PM2.5	GP	NB	4	54725473	243.77	235.67	243.77	226.57
PM2.5	GP	NB	4	178545469	96.08	92.89	96.08	89.39
PM2.5	GP	NB	4	527117854	28.68	27.75	28.68	26.47
PM2.5	GP	NB	5	54735479	56.49	51.32	56.49	49.68

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	GP	NB	5	54745475	37.66	34.24	37.66	33.15
PM2.5	GP	NB	5	54755476	18.83	17.10	18.83	16.55
PM2.5	GP	NB	5	54768593	60.25	54.74	60.25	53.00
PM2.5	GP	NB	5	54795474	320.09	291.01	320.09	281.69
PM2.5	GP	NB	5	69596960	9.04	8.21	9.04	7.99
PM2.5	GP	NB	5	69606961	62.14	56.41	62.14	54.60
PM2.5	GP	NB	5	69619599	293.73	266.68	293.73	259.54
PM2.5	GP	NB	5	69626963	56.49	51.32	56.49	49.68
PM2.5	GP	NB	5	69636964	338.92	307.71	338.92	299.47
PM2.5	GP	NB	5	85936959	173.98	158.06	173.98	153.87
PM2.5	GP	NB	5	95996962	149.13	135.48	149.13	131.89
PM2.5	GP	SB	1	27823139	5.00	8.56	5.00	7.95
PM2.5	GP	SB	1	28242827	28.92	49.41	28.92	47.08
PM2.5	GP	SB	1	28273144	5.36	9.17	5.36	8.72
PM2.5	GP	SB	1	28282824	83.73	143.04	83.73	137.27
PM2.5	GP	SB	1	28303143	16.25	27.75	16.25	26.64
PM2.5	GP	SB	1	28363140	8.93	15.28	8.93	14.41
PM2.5	GP	SB	1	29372782	14.28	24.50	14.28	22.74
PM2.5	GP	SB	1	31392836	7.85	13.45	7.85	12.49
PM2.5	GP	SB	1	31403141	17.85	30.56	17.85	28.82
PM2.5	GP	SB	1	31413142	8.93	15.28	8.93	14.41
PM2.5	GP	SB	1	31422830	11.60	19.82	11.60	18.70
PM2.5	GP	SB	1	31432828	6.25	10.67	6.25	10.24
PM2.5	GP	SB	1	31443701	149.96	256.63	149.96	244.27
PM2.5	GP	SB	1	37013975	8.93	15.25	8.93	14.38
PM2.5	GP	SB	1	39753976	53.56	91.50	53.56	86.30
PM2.5	GP	SB	1	39763653	13.57	23.20	13.57	21.53
PM2.5	GP	SB	2	27812937	10.61	8.33	10.14	8.16
PM2.5	GP	SB	2	27892790	15.91	12.44	15.45	12.27
PM2.5	GP	SB	2	27902791	26.52	20.82	25.59	20.48
PM2.5	GP	SB	2	27912792	13.26	10.37	12.79	10.19
PM2.5	GP	SB	2	27922793	6.63	5.21	6.40	5.12
PM2.5	GP	SB	2	27932794	12.73	9.99	12.36	9.86
PM2.5	GP	SB	2	27942795	15.91	12.49	15.45	12.32
PM2.5	GP	SB	2	27953145	7.96	6.25	7.72	6.16
PM2.5	GP	SB	2	28402781	47.74	37.48	46.34	36.97
PM2.5	GP	SB	2	28413147	37.13	29.15	36.20	28.81
PM2.5	GP	SB	2	28523156	15.91	12.44	15.45	12.27
PM2.5	GP	SB	2	28533155	31.82	24.99	30.89	24.64
PM2.5	GP	SB	2	28553154	9.28	7.29	8.95	7.17
PM2.5	GP	SB	2	28572855	42.96	33.66	41.70	33.19
PM2.5	GP	SB	2	28718230	15.90	12.46	15.20	12.20
PM2.5	GP	SB	2	28722873	31.80	24.87	30.86	24.52
PM2.5	GP	SB	2	28733051	47.71	37.31	46.29	36.78

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	GP	SB	2	30493050	31.80	24.87	30.86	24.52
PM2.5	GP	SB	2	30503151	18.56	14.54	18.10	14.36
PM2.5	GP	SB	2	30513052	31.80	24.87	30.86	24.52
PM2.5	GP	SB	2	30523150	15.90	12.44	15.43	12.26
PM2.5	GP	SB	2	31453146	17.50	13.74	16.99	13.55
PM2.5	GP	SB	2	31462841	37.13	29.15	36.20	28.81
PM2.5	GP	SB	2	31472840	18.56	14.58	18.10	14.40
PM2.5	GP	SB	2	31503049	15.90	12.44	15.43	12.26
PM2.5	GP	SB	2	31513152	37.13	29.08	36.20	28.73
PM2.5	GP	SB	2	31522857	55.69	43.62	54.29	43.09
PM2.5	GP	SB	2	31542853	9.28	7.29	8.95	7.17
PM2.5	GP	SB	2	31552852	23.87	18.74	23.17	18.48
PM2.5	GP	SB	2	31562789	15.91	12.44	15.45	12.27
PM2.5	GP	SB	2	82302872	15.91	12.45	15.21	12.19
PM2.5	GP	SB	3	28602861	13.57	8.21	12.83	8.21
PM2.5	GP	SB	3	28612862	13.57	8.21	12.83	8.21
PM2.5	GP	SB	3	28638657	18.46	11.16	17.19	11.16
PM2.5	GP	SB	3	28672868	86.81	52.62	80.81	52.62
PM2.5	GP	SB	3	28682869	13.56	8.22	12.81	8.22
PM2.5	GP	SB	3	28692870	6.78	4.11	6.41	4.11
PM2.5	GP	SB	3	28702871	27.13	16.44	25.63	16.44
PM2.5	GP	SB	3	41084113	92.30	55.82	87.23	55.82
PM2.5	GP	SB	3	52475242	21.72	13.14	20.23	13.14
PM2.5	GP	SB	3	52665247	10.86	6.57	10.11	6.57
PM2.5	GP	SB	3	52675268	36.65	22.17	34.64	22.17
PM2.5	GP	SB	3	52685269	169.67	102.62	160.35	102.62
PM2.5	GP	SB	3	52695270	31.22	18.88	29.50	18.88
PM2.5	GP	SB	3	52704108	264.69	160.08	250.15	160.08
PM2.5	GP	SB	3	86572867	146.49	88.79	136.37	88.79
PM2.5	GP	SB	3	89982863	10.86	6.57	10.11	6.57
PM2.5	GP	SB	3	145112860	16.29	9.85	15.54	9.85
PM2.5	GP	SB	3	178128998	11.94	7.22	11.12	7.22
PM2.5	GP	SB	3	178525267	123.79	74.87	118.13	74.87
PM2.5	GP	SB	3	286217812	18.46	11.16	17.19	11.16
PM2.5	GP	SB	3	411314509	95.02	57.47	89.80	57.47
PM2.5	GP	SB	3	524217852	24.43	14.78	23.09	14.78
PM2.5	GP	SB	3	1450914512	28.50	17.24	26.94	17.24
PM2.5	GP	SB	3	1451014511	125.42	75.86	119.68	75.86
PM2.5	GP	SB	3	1451214510	57.01	34.48	53.88	34.48
PM2.5	GP	SB	4	52395266	18.77	12.51	17.78	12.51
PM2.5	GP	SB	4	52635264	43.59	29.08	42.11	29.08
PM2.5	GP	SB	4	52645265	126.56	84.43	122.26	84.43
PM2.5	GP	SB	4	52655239	23.47	15.63	22.48	15.63
PM2.5	GP	SB	4	54805263	239.19	159.47	230.69	159.47

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	GP	SB	5	54785480	52.01	49.78	51.51	49.78
PM2.5	GP	SB	5	54815567	20.83	19.91	20.64	19.91
PM2.5	GP	SB	5	55675568	41.63	39.82	41.25	39.82
PM2.5	GP	SB	5	55685478	353.70	338.48	350.88	338.48
PM2.5	GP	SB	5	69686987	312.70	298.66	309.85	298.66
PM2.5	GP	SB	5	69837280	55.51	53.09	54.89	53.09
PM2.5	GP	SB	5	69848592	160.37	153.31	158.93	153.31
PM2.5	GP	SB	5	69876989	52.07	49.78	51.51	49.78
PM2.5	GP	SB	5	69899598	116.25	111.17	114.96	111.17
PM2.5	GP	SB	5	72806984	8.33	7.96	8.26	7.96
PM2.5	GP	SB	5	85925481	53.75	51.44	53.22	51.44
PM2.5	GP	SB	5	95986983	270.60	258.84	268.09	258.84
PM2.5	HOV	NB	1	1558615587	3.85	1.43	5.03	1.43
PM2.5	HOV	NB	1	1558715588	1.93	0.71	2.52	0.71
PM2.5	HOV	NB	1	1558815590	11.56	4.28	15.10	4.28
PM2.5	HOV	NB	1	1559015591	1.93	0.71	2.52	0.71
PM2.5	HOV	NB	1	1559115592	26.93	9.98	35.23	9.98
PM2.5	HOV	NB	1	1559215593	0.96	0.36	1.26	0.36
PM2.5	HOV	NB	1	1559315594	5.20	1.92	6.79	1.92
PM2.5	HOV	NB	1	1559415595	11.54	4.28	15.10	4.28
PM2.5	HOV	NB	1	1559515596	1.92	0.71	2.52	0.71
PM2.5	HOV	NB	1	1559615597	1.92	0.71	2.52	0.71
PM2.5	HOV	NB	1	1559715598	1.73	0.64	2.26	0.64
PM2.5	HOV	NB	1	1559815599	1.92	0.71	2.52	0.71
PM2.5	HOV	NB	1	1559915600	3.85	1.43	5.03	1.43
PM2.5	HOV	NB	1	1560015601	2.31	0.86	3.02	0.86
PM2.5	HOV	NB	1	1560115602	1.92	0.71	2.52	0.71
PM2.5	HOV	NB	1	1560215603	2.12	0.78	2.77	0.78
PM2.5	HOV	NB	1	1560315604	1.35	0.50	1.76	0.50
PM2.5	HOV	NB	1	1560415605	2.89	1.07	3.77	1.07
PM2.5	HOV	NB	2	1560515606	2.09	2.07	2.34	2.39
PM2.5	HOV	NB	2	1560615607	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	2	1560715609	2.09	2.07	2.34	2.39
PM2.5	HOV	NB	2	1560915610	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	2	1561015611	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	2	1561115612	2.31	2.28	2.58	2.63
PM2.5	HOV	NB	2	1561215613	1.05	1.03	1.17	1.19
PM2.5	HOV	NB	2	1561315614	4.20	4.14	4.68	4.78
PM2.5	HOV	NB	2	1561415615	1.88	1.86	2.11	2.15
PM2.5	HOV	NB	2	1561515616	1.67	1.66	1.87	1.91
PM2.5	HOV	NB	2	1561615617	3.55	3.52	3.98	4.06
PM2.5	HOV	NB	2	1561715618	1.26	1.24	1.41	1.43
PM2.5	HOV	NB	2	1561815619	2.09	2.07	2.34	2.39
PM2.5	HOV	NB	2	1561915620	2.09	2.07	2.34	2.39

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	HOV	NB	2	1562015621	3.14	3.10	3.51	3.58
PM2.5	HOV	NB	2	1562115622	5.44	5.38	6.09	6.21
PM2.5	HOV	NB	2	1562215623	1.25	1.24	1.41	1.43
PM2.5	HOV	NB	2	1562315624	1.25	1.24	1.41	1.43
PM2.5	HOV	NB	2	1562415627	5.65	5.61	6.32	6.45
PM2.5	HOV	NB	2	1562715628	6.27	6.24	7.03	7.17
PM2.5	HOV	NB	2	1562815629	4.18	4.15	4.68	4.78
PM2.5	HOV	NB	2	1562915630	2.09	2.07	2.34	2.39
PM2.5	HOV	NB	2	1563015631	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	2	1563115632	2.09	2.07	2.34	2.39
PM2.5	HOV	NB	2	1563215633	2.09	2.07	2.34	2.39
PM2.5	HOV	NB	2	1563315634	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	2	1563415635	6.28	6.21	7.03	7.17
PM2.5	HOV	NB	2	1563515726	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	2	1572615727	4.18	4.14	4.68	4.78
PM2.5	HOV	NB	3	1349415732	1.00	2.56	1.00	4.52
PM2.5	HOV	NB	3	1349615746	1.17	3.01	1.17	5.32
PM2.5	HOV	NB	3	1572715728	1.17	3.01	1.17	5.32
PM2.5	HOV	NB	3	1572815729	0.29	0.75	0.29	1.33
PM2.5	HOV	NB	3	1572915730	0.94	2.40	0.94	4.26
PM2.5	HOV	NB	3	1573015731	4.93	12.62	4.93	22.35
PM2.5	HOV	NB	3	1573113494	7.93	20.29	7.93	35.91
PM2.5	HOV	NB	3	1573215733	2.17	5.57	2.17	9.84
PM2.5	HOV	NB	3	1573315734	0.70	1.80	0.70	3.19
PM2.5	HOV	NB	3	1573415735	0.88	2.26	0.88	3.99
PM2.5	HOV	NB	3	1573515736	0.41	1.05	0.41	1.86
PM2.5	HOV	NB	3	1573615737	4.58	11.72	4.58	20.75
PM2.5	HOV	NB	3	1573715738	1.41	3.61	1.41	6.38
PM2.5	HOV	NB	3	1573815739	1.06	2.71	1.06	4.79
PM2.5	HOV	NB	3	1573915740	5.29	13.53	5.29	23.94
PM2.5	HOV	NB	3	1574015741	4.05	10.38	4.05	18.36
PM2.5	HOV	NB	3	1574115742	11.45	29.33	11.45	51.88
PM2.5	HOV	NB	3	1574215743	1.41	3.61	1.41	6.38
PM2.5	HOV	NB	3	1574315744	7.34	18.80	7.34	33.25
PM2.5	HOV	NB	3	1574415745	1.64	4.21	1.64	7.45
PM2.5	HOV	NB	3	1574513496	4.35	11.13	4.35	19.69
PM2.5	HOV	NB	3	1574616411	1.12	2.86	1.12	5.05
PM2.5	HOV	NB	3	1641110669	0.41	1.05	0.41	1.86
PM2.5	HOV	NB	4	1066910670	1.32	4.74	1.32	6.17
PM2.5	HOV	NB	4	1067010671	1.26	4.53	1.26	5.90
PM2.5	HOV	NB	4	1067110672	5.29	18.96	5.29	24.66
PM2.5	HOV	NB	4	1067210673	1.67	5.97	1.67	7.77
PM2.5	HOV	NB	4	1067310674	10.40	37.35	10.40	48.52
PM2.5	HOV	NB	5	1067410675	1.74	5.79	1.74	7.35

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	HOV	NB	5	1067510676	11.10	36.99	11.10	46.86
PM2.5	HOV	NB	5	1067610677	1.08	3.61	1.08	4.56
PM2.5	HOV	NB	5	1067710678	0.36	1.20	0.36	1.52
PM2.5	HOV	NB	5	1067810679	1.92	6.39	1.92	8.11
PM2.5	HOV	NB	5	1067910680	4.56	15.17	4.56	19.25
PM2.5	HOV	NB	5	1068010681	0.24	0.80	0.24	1.01
PM2.5	HOV	NB	5	1068110682	1.92	6.39	1.92	8.11
PM2.5	HOV	NB	5	1068210683	8.76	29.14	8.76	36.98
PM2.5	HOV	NB	5	1068310684	2.88	9.60	2.88	12.16
PM2.5	HOV	NB	5	1068410685	1.86	6.19	1.86	7.85
PM2.5	HOV	NB	5	1068510686	9.48	31.53	9.48	40.02
PM2.5	HOV	SB	1	1554815549	1.69	3.48	1.69	6.03
PM2.5	HOV	SB	1	1554915550	0.59	1.21	0.59	2.10
PM2.5	HOV	SB	1	1555015551	0.81	1.67	0.81	2.88
PM2.5	HOV	SB	1	1555115552	0.73	1.52	0.73	2.62
PM2.5	HOV	SB	1	1555215553	1.47	3.04	1.47	5.25
PM2.5	HOV	SB	1	1555315554	0.73	1.52	0.73	2.62
PM2.5	HOV	SB	1	1555415555	0.95	1.97	0.95	3.41
PM2.5	HOV	SB	1	1555515556	0.95	1.97	0.95	3.41
PM2.5	HOV	SB	1	1555615557	0.37	0.76	0.37	1.31
PM2.5	HOV	SB	1	1555715558	4.91	10.13	4.91	17.57
PM2.5	HOV	SB	1	1555815559	1.98	4.08	1.98	7.08
PM2.5	HOV	SB	1	1555915560	0.37	0.76	0.37	1.31
PM2.5	HOV	SB	1	1556015561	10.26	21.21	10.26	36.72
PM2.5	HOV	SB	1	1556115562	0.73	1.51	0.73	2.62
PM2.5	HOV	SB	1	1556215563	4.40	9.08	4.40	15.74
PM2.5	HOV	SB	1	1556315564	1.32	2.72	1.32	4.72
PM2.5	HOV	SB	2	1551715518	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1551815519	6.10	6.50	8.08	7.12
PM2.5	HOV	SB	2	1551915520	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1552015521	2.03	2.17	2.69	2.37
PM2.5	HOV	SB	2	1552115522	2.03	2.17	2.69	2.37
PM2.5	HOV	SB	2	1552215523	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1552315524	2.03	2.16	2.69	2.37
PM2.5	HOV	SB	2	1552415525	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1552515526	6.10	6.49	8.08	7.12
PM2.5	HOV	SB	2	1552615529	5.49	5.87	7.27	6.41
PM2.5	HOV	SB	2	1552915530	1.42	1.52	1.88	1.66
PM2.5	HOV	SB	2	1553015531	1.42	1.52	1.88	1.66
PM2.5	HOV	SB	2	1553115532	5.49	5.85	7.27	6.41
PM2.5	HOV	SB	2	1553215533	3.05	3.25	4.04	3.56
PM2.5	HOV	SB	2	1553315534	2.03	2.16	2.69	2.37
PM2.5	HOV	SB	2	1553415535	2.03	2.16	2.69	2.37
PM2.5	HOV	SB	2	1553515536	2.03	2.16	2.69	2.37

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	HOV	SB	2	1553615537	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1553715538	2.03	2.17	2.69	2.37
PM2.5	HOV	SB	2	1553815539	1.02	1.08	1.35	1.19
PM2.5	HOV	SB	2	1553915540	1.63	1.73	2.15	1.90
PM2.5	HOV	SB	2	1554015541	2.03	2.16	2.69	2.37
PM2.5	HOV	SB	2	1554115542	1.02	1.08	1.35	1.19
PM2.5	HOV	SB	2	1554215543	2.23	2.38	2.96	2.61
PM2.5	HOV	SB	2	1554315544	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1554415545	4.06	4.33	5.38	4.75
PM2.5	HOV	SB	2	1554515546	2.03	2.16	2.69	2.37
PM2.5	HOV	SB	2	1554615547	6.10	6.49	8.08	7.12
PM2.5	HOV	SB	2	1554715548	2.03	2.17	2.69	2.37
PM2.5	HOV	SB	2	1565915517	2.84	3.03	3.77	3.32
PM2.5	HOV	SB	2	1572415659	2.44	2.60	3.23	2.85
PM2.5	HOV	SB	3	1070610707	1.21	0.45	2.07	0.45
PM2.5	HOV	SB	3	1070715701	3.28	1.22	5.63	1.22
PM2.5	HOV	SB	3	1349515702	12.93	4.83	22.21	4.83
PM2.5	HOV	SB	3	1570113495	3.45	1.29	5.92	1.29
PM2.5	HOV	SB	3	1570215703	4.66	1.74	8.00	1.74
PM2.5	HOV	SB	3	1570315704	21.55	8.05	37.02	8.05
PM2.5	HOV	SB	3	1570415705	4.14	1.54	7.11	1.54
PM2.5	HOV	SB	3	1570515706	33.79	12.62	58.05	12.62
PM2.5	HOV	SB	3	1570615707	12.07	4.51	20.73	4.51
PM2.5	HOV	SB	3	1570715709	12.07	4.51	20.73	4.51
PM2.5	HOV	SB	3	1570915710	3.62	1.35	6.22	1.35
PM2.5	HOV	SB	3	1571015711	7.07	2.64	12.14	2.64
PM2.5	HOV	SB	3	1571115713	13.28	4.96	22.81	4.96
PM2.5	HOV	SB	3	1571315714	1.38	0.51	2.37	0.51
PM2.5	HOV	SB	3	1571415715	2.59	0.97	4.44	0.97
PM2.5	HOV	SB	3	1571515716	2.07	0.77	3.55	0.77
PM2.5	HOV	SB	3	1571615717	5.00	1.87	8.59	1.87
PM2.5	HOV	SB	3	1571715718	1.55	0.58	2.67	0.58
PM2.5	HOV	SB	3	1571815719	2.93	1.09	5.04	1.09
PM2.5	HOV	SB	3	1571915720	23.28	8.69	39.99	8.69
PM2.5	HOV	SB	3	1572015721	14.66	5.47	25.18	5.47
PM2.5	HOV	SB	3	1572115722	2.41	0.90	4.15	0.90
PM2.5	HOV	SB	3	1572215723	0.86	0.32	1.48	0.32
PM2.5	HOV	SB	3	1572315724	3.45	1.29	5.92	1.29
PM2.5	HOV	SB	4	1070110702	36.37	9.30	48.69	9.30
PM2.5	HOV	SB	4	1070210703	5.99	1.53	8.03	1.53
PM2.5	HOV	SB	4	1070310704	18.18	4.65	24.34	4.65
PM2.5	HOV	SB	4	1070410705	4.60	1.18	6.15	1.18
PM2.5	HOV	SB	4	1070510706	4.60	1.18	6.15	1.18
PM2.5	HOV	SB	5	1068910690	36.76	11.70	40.08	11.70

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM2.5	HOV	SB	5	1069010691	7.17	2.28	7.81	2.28
PM2.5	HOV	SB	5	1069110692	11.10	3.53	12.10	3.53
PM2.5	HOV	SB	5	1069210693	33.99	10.81	37.06	10.81
PM2.5	HOV	SB	5	1069310694	7.17	2.28	7.81	2.28
PM2.5	HOV	SB	5	1069410695	0.92	0.29	1.01	0.29
PM2.5	HOV	SB	5	1069510696	18.03	5.74	19.66	5.74
PM2.5	HOV	SB	5	1069610697	6.94	2.21	7.56	2.21
PM2.5	HOV	SB	5	1069710698	1.39	0.44	1.51	0.44
PM2.5	HOV	SB	5	1069810699	4.39	1.40	4.79	1.40
PM2.5	HOV	SB	5	1069910700	42.54	13.53	46.38	13.53
PM2.5	HOV	SB	5	1070010701	6.47	2.06	7.06	2.06
PM10	GP	NB	1	27692822	14.23	10.51	13.79	10.51
PM10	GP	NB	1	27702771	28.42	21.02	27.58	21.02
PM10	GP	NB	1	27712772	28.42	21.02	27.58	21.02
PM10	GP	NB	1	27722773	25.58	18.92	24.82	18.92
PM10	GP	NB	1	27732831	26.06	19.27	25.11	19.27
PM10	GP	NB	1	27742775	28.43	21.02	27.39	21.02
PM10	GP	NB	1	27752776	18.97	14.01	18.11	14.01
PM10	GP	NB	1	27762778	20.87	15.41	19.92	15.41
PM10	GP	NB	1	27782779	13.28	9.81	12.67	9.81
PM10	GP	NB	1	27792780	28.44	21.02	27.16	21.02
PM10	GP	NB	1	28222825	76.73	56.75	74.46	56.75
PM10	GP	NB	1	28252770	170.71	126.11	165.52	126.11
PM10	GP	NB	1	28312774	47.38	35.03	45.65	35.03
PM10	GP	NB	1	36403641	18.96	14.01	18.10	14.01
PM10	GP	NB	1	36413711	142.10	105.10	137.02	105.10
PM10	GP	NB	1	36422769	398.33	294.27	386.22	294.27
PM10	GP	NB	1	36933640	37.92	28.03	36.19	28.03
PM10	GP	NB	1	37113642	23.68	17.52	22.84	17.52
PM10	GP	NB	2	27802783	23.92	20.51	23.53	20.04
PM10	GP	NB	2	27838877	47.85	41.01	47.06	40.08
PM10	GP	NB	2	27852844	83.73	71.78	82.94	70.86
PM10	GP	NB	2	27862849	71.77	61.52	70.98	60.58
PM10	GP	NB	2	27872788	53.71	46.15	53.04	45.32
PM10	GP	NB	2	27882796	17.94	15.38	17.75	15.15
PM10	GP	NB	2	27962797	35.88	30.76	35.49	30.29
PM10	GP	NB	2	27972798	35.88	30.76	35.49	30.29
PM10	GP	NB	2	27982799	53.83	46.14	53.24	45.44
PM10	GP	NB	2	27992800	59.81	51.32	59.02	50.39
PM10	GP	NB	2	28002854	17.90	15.38	17.68	15.10
PM10	GP	NB	2	28012803	96.68	83.14	95.68	81.89
PM10	GP	NB	2	28032804	107.42	92.38	106.31	90.99
PM10	GP	NB	2	28042805	71.66	61.58	70.86	60.65
PM10	GP	NB	2	28052806	35.79	30.75	35.39	30.28

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM10	GP	NB	2	28062807	71.58	61.49	70.78	60.56
PM10	GP	NB	2	28072808	35.79	30.75	35.39	30.28
PM10	GP	NB	2	28083053	35.79	30.75	35.39	30.28
PM10	GP	NB	2	28392785	83.73	71.78	82.94	70.86
PM10	GP	NB	2	28432786	17.94	15.38	17.74	15.15
PM10	GP	NB	2	28442843	39.47	33.83	39.04	33.32
PM10	GP	NB	2	28498841	26.85	23.07	26.52	22.66
PM10	GP	NB	2	28542801	17.90	15.38	17.68	15.10
PM10	GP	NB	2	30532809	71.58	61.49	70.78	60.56
PM10	GP	NB	2	31613162	35.83	30.84	35.04	29.92
PM10	GP	NB	2	31623066	59.67	51.24	58.89	50.31
PM10	GP	NB	2	88412787	23.87	20.51	23.57	20.14
PM10	GP	NB	2	88772839	35.88	30.76	35.49	30.29
PM10	GP	NB	2	121733161	78.77	67.64	77.90	66.62
PM10	GP	NB	2	280912173	25.05	21.52	24.77	21.20
PM10	GP	NB	3	28752878	15.67	23.27	15.67	21.73
PM10	GP	NB	3	28783168	15.67	23.27	15.67	21.73
PM10	GP	NB	3	28863164	100.26	149.01	100.26	136.71
PM10	GP	NB	3	28873163	7.83	11.63	7.83	10.86
PM10	GP	NB	3	30662887	31.33	46.51	31.33	43.43
PM10	GP	NB	3	31632886	15.67	23.25	15.67	21.72
PM10	GP	NB	3	31672875	37.60	55.84	37.60	51.24
PM10	GP	NB	3	31683124	18.80	27.90	18.80	26.37
PM10	GP	NB	3	41094111	111.23	165.19	111.23	154.30
PM10	GP	NB	3	41115274	305.49	453.69	305.49	423.78
PM10	GP	NB	3	52415246	31.33	46.53	31.33	43.46
PM10	GP	NB	3	52465244	12.53	18.61	12.53	17.08
PM10	GP	NB	3	52735470	195.83	290.83	195.83	271.65
PM10	GP	NB	3	52745273	36.03	53.51	36.03	49.98
PM10	GP	NB	3	54705471	43.86	65.14	43.86	60.85
PM10	GP	NB	3	145174109	140.99	209.39	140.99	195.59
PM10	GP	NB	3	156553167	21.31	31.64	21.31	29.03
PM10	GP	NB	3	178515241	28.20	41.88	28.20	39.12
PM10	GP	NB	3	312414514	146.63	217.65	146.63	205.65
PM10	GP	NB	3	316415655	167.94	249.59	167.94	228.99
PM10	GP	NB	3	547117851	139.11	206.60	139.11	195.25
PM10	GP	NB	3	1451414515	36.03	53.51	36.03	49.98
PM10	GP	NB	3	1451514517	31.33	46.53	31.33	43.46
PM10	GP	NB	4	52385271	39.61	40.75	39.61	38.87
PM10	GP	NB	4	52445238	31.69	32.60	31.69	30.72
PM10	GP	NB	4	54695472	71.29	73.31	71.29	70.53
PM10	GP	NB	4	54725473	403.99	415.43	403.99	399.44
PM10	GP	NB	4	178545469	159.22	163.74	159.22	157.52
PM10	GP	NB	4	527117854	47.53	48.90	47.53	46.65

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM10	GP	NB	5	54735479	90.65	87.58	90.65	84.79
PM10	GP	NB	5	54745475	60.43	58.42	60.43	56.55
PM10	GP	NB	5	54755476	30.22	29.18	30.22	28.25
PM10	GP	NB	5	54768593	96.69	93.42	96.69	90.44
PM10	GP	NB	5	54795474	513.68	496.50	513.68	480.63
PM10	GP	NB	5	69596960	14.50	14.01	14.50	13.64
PM10	GP	NB	5	69606961	99.71	96.30	99.71	93.22
PM10	GP	NB	5	69619599	471.38	455.23	471.38	443.08
PM10	GP	NB	5	69626963	90.65	87.58	90.65	84.79
PM10	GP	NB	5	69636964	543.90	525.27	543.90	511.25
PM10	GP	NB	5	85936959	279.20	269.75	279.20	262.59
PM10	GP	NB	5	95996962	239.32	231.21	239.32	225.08
PM10	GP	SB	1	27823139	8.66	15.46	8.66	14.36
PM10	GP	SB	1	28242827	50.08	89.36	50.08	85.11
PM10	GP	SB	1	28273144	9.27	16.56	9.27	15.77
PM10	GP	SB	1	28282824	144.97	258.70	144.97	248.18
PM10	GP	SB	1	28303143	28.13	50.20	28.13	48.15
PM10	GP	SB	1	28363140	15.46	27.61	15.46	26.03
PM10	GP	SB	1	29372782	24.73	44.24	24.73	41.06
PM10	GP	SB	1	31392836	13.60	24.30	13.60	22.56
PM10	GP	SB	1	31403141	30.91	55.22	30.91	52.06
PM10	GP	SB	1	31413142	15.46	27.61	15.46	26.03
PM10	GP	SB	1	31422830	20.09	35.85	20.09	33.81
PM10	GP	SB	1	31432828	10.82	19.31	10.82	18.52
PM10	GP	SB	1	31443701	259.66	463.79	259.66	441.49
PM10	GP	SB	1	37013975	15.46	27.58	15.46	26.00
PM10	GP	SB	1	39753976	92.73	165.48	92.73	156.03
PM10	GP	SB	1	39763653	23.49	41.94	23.49	38.92
PM10	GP	SB	2	27812937	19.91	15.51	19.03	15.19
PM10	GP	SB	2	27892790	29.86	23.21	28.98	22.89
PM10	GP	SB	2	27902791	49.76	38.78	48.01	38.14
PM10	GP	SB	2	27912792	24.88	19.35	24.01	19.02
PM10	GP	SB	2	27922793	12.44	9.69	12.00	9.53
PM10	GP	SB	2	27932794	23.89	18.61	23.19	18.36
PM10	GP	SB	2	27942795	29.86	23.27	28.98	22.95
PM10	GP	SB	2	27953145	14.93	11.63	14.49	11.47
PM10	GP	SB	2	28402781	89.57	69.80	86.95	68.84
PM10	GP	SB	2	28413147	69.67	54.29	67.92	53.65
PM10	GP	SB	2	28523156	29.86	23.21	28.98	22.89
PM10	GP	SB	2	28533155	59.72	46.53	57.96	45.89
PM10	GP	SB	2	28553154	17.41	13.57	16.80	13.35
PM10	GP	SB	2	28572855	80.62	62.74	78.25	61.87
PM10	GP	SB	2	28718230	29.85	23.23	28.53	22.75
PM10	GP	SB	2	28722873	59.70	46.41	57.93	45.76

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour) Base AM	Base PM	Future AM	Future PM
PM10	GP	SB	2	28733051	89.54	69.62	86.90	68.65
PM10	GP	SB	2	30493050	59.70	46.41	57.93	45.76
PM10	GP	SB	2	30503151	34.83	27.11	33.96	26.78
PM10	GP	SB	2	30513052	59.70	46.41	57.93	45.76
PM10	GP	SB	2	30523150	29.85	23.21	28.97	22.88
PM10	GP	SB	2	31453146	32.84	25.59	31.88	25.24
PM10	GP	SB	2	31462841	69.67	54.29	67.92	53.65
PM10	GP	SB	2	31472840	34.83	27.14	33.96	26.82
PM10	GP	SB	2	31503049	29.85	23.21	28.97	22.88
PM10	GP	SB	2	31513152	69.67	54.21	67.92	53.56
PM10	GP	SB	2	31522857	104.50	81.32	101.88	80.35
PM10	GP	SB	2	31542853	17.41	13.57	16.80	13.35
PM10	GP	SB	2	31552852	44.79	34.90	43.47	34.42
PM10	GP	SB	2	31562789	29.86	23.21	28.98	22.89
PM10	GP	SB	2	82302872	29.86	23.22	28.54	22.74
PM10	GP	SB	3	28602861	26.03	15.78	24.60	15.78
PM10	GP	SB	3	28612862	26.03	15.78	24.60	15.78
PM10	GP	SB	3	28638657	35.40	21.46	32.97	21.46
PM10	GP	SB	3	28672868	166.53	101.06	155.06	101.06
PM10	GP	SB	3	28682869	26.02	15.79	24.59	15.79
PM10	GP	SB	3	28692870	13.01	7.90	12.29	7.90
PM10	GP	SB	3	28702871	52.04	31.58	49.17	31.58
PM10	GP	SB	3	41084113	177.01	107.29	167.29	107.29
PM10	GP	SB	3	52475242	41.65	25.24	38.79	25.24
PM10	GP	SB	3	52665247	20.82	12.62	19.40	12.62
PM10	GP	SB	3	52675268	70.28	42.60	66.42	42.60
PM10	GP	SB	3	52685269	325.39	197.22	307.52	197.22
PM10	GP	SB	3	52695270	59.87	36.29	56.58	36.29
PM10	GP	SB	3	52704108	507.60	307.66	479.72	307.66
PM10	GP	SB	3	86572867	281.02	170.53	261.66	170.53
PM10	GP	SB	3	89982863	20.82	12.62	19.40	12.62
PM10	GP	SB	3	145112860	31.24	18.93	29.81	18.93
PM10	GP	SB	3	178128998	22.91	13.88	21.33	13.88
PM10	GP	SB	3	178525267	237.40	143.89	226.54	143.89
PM10	GP	SB	3	286217812	35.40	21.46	32.97	21.46
PM10	GP	SB	3	411314509	182.22	110.44	172.21	110.44
PM10	GP	SB	3	524217852	46.86	28.40	44.28	28.40
PM10	GP	SB	3	1450914512	54.67	33.13	51.66	33.13
PM10	GP	SB	3	1451014511	240.53	145.78	229.52	145.78
PM10	GP	SB	3	1451214510	109.33	66.26	103.33	66.26
PM10	GP	SB	4	52395266	34.90	23.08	33.06	23.08
PM10	GP	SB	4	52635264	81.09	53.67	78.30	53.67
PM10	GP	SB	4	52645265	235.43	155.81	227.31	155.81
PM10	GP	SB	4	52655239	43.63	28.85	41.79	28.85

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour) Base AM	Base PM	Future AM	Future PM
PM10	GP	SB	4	54805263	444.85	294.31	429.11	294.31
PM10	GP	SB	5	54785480	92.92	83.43	91.98	83.43
PM10	GP	SB	5	54815567	37.19	33.37	36.86	33.37
PM10	GP	SB	5	55675568	74.36	66.75	73.68	66.75
PM10	GP	SB	5	55685478	631.86	567.34	626.57	567.34
PM10	GP	SB	5	69686987	558.15	500.59	553.11	500.59
PM10	GP	SB	5	69837280	99.14	88.99	98.06	88.99
PM10	GP	SB	5	69848592	286.36	256.97	283.80	256.97
PM10	GP	SB	5	69876989	92.97	83.43	91.98	83.43
PM10	GP	SB	5	69899598	207.61	186.33	205.34	186.33
PM10	GP	SB	5	72806984	14.88	13.35	14.74	13.35
PM10	GP	SB	5	85925481	96.02	86.21	95.04	86.21
PM10	GP	SB	5	95986983	483.32	433.85	478.90	433.85
PM10	HOV	NB	1	1558615587	7.08	2.64	9.26	2.64
PM10	HOV	NB	1	1558715588	3.54	1.32	4.63	1.32
PM10	HOV	NB	1	1558815590	21.24	7.93	27.77	7.93
PM10	HOV	NB	1	1559015591	3.54	1.32	4.63	1.32
PM10	HOV	NB	1	1559115592	49.51	18.49	64.80	18.49
PM10	HOV	NB	1	1559215593	1.77	0.66	2.31	0.66
PM10	HOV	NB	1	1559315594	9.56	3.57	12.50	3.57
PM10	HOV	NB	1	1559415595	21.22	7.93	27.77	7.93
PM10	HOV	NB	1	1559515596	3.54	1.32	4.63	1.32
PM10	HOV	NB	1	1559615597	3.54	1.32	4.63	1.32
PM10	HOV	NB	1	1559715598	3.18	1.19	4.17	1.19
PM10	HOV	NB	1	1559815599	3.54	1.32	4.63	1.32
PM10	HOV	NB	1	1559915600	7.08	2.64	9.26	2.64
PM10	HOV	NB	1	1560015601	4.25	1.59	5.55	1.59
PM10	HOV	NB	1	1560115602	3.54	1.32	4.63	1.32
PM10	HOV	NB	1	1560215603	3.89	1.45	5.09	1.45
PM10	HOV	NB	1	1560315604	2.48	0.92	3.24	0.92
PM10	HOV	NB	1	1560415605	5.31	1.98	6.94	1.98
PM10	HOV	NB	2	1560515606	3.96	3.88	4.44	4.48
PM10	HOV	NB	2	1560615607	7.91	7.77	8.87	8.97
PM10	HOV	NB	2	1560715609	3.96	3.88	4.44	4.48
PM10	HOV	NB	2	1560915610	7.91	7.76	8.87	8.97
PM10	HOV	NB	2	1561015611	7.91	7.76	8.87	8.97
PM10	HOV	NB	2	1561115612	4.36	4.27	4.88	4.93
PM10	HOV	NB	2	1561215613	1.98	1.94	2.22	2.24
PM10	HOV	NB	2	1561315614	7.93	7.76	8.87	8.97
PM10	HOV	NB	2	1561415615	3.56	3.49	3.99	4.03
PM10	HOV	NB	2	1561515616	3.17	3.11	3.55	3.59
PM10	HOV	NB	2	1561615617	6.72	6.60	7.54	7.62
PM10	HOV	NB	2	1561715618	2.37	2.33	2.66	2.69
PM10	HOV	NB	2	1561815619	3.96	3.88	4.44	4.48

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM10	HOV	NB	2	1561915620	3.96	3.88	4.44	4.48
PM10	HOV	NB	2	1562015621	5.93	5.82	6.65	6.72
PM10	HOV	NB	2	1562115622	10.28	10.09	11.53	11.66
PM10	HOV	NB	2	1562215623	2.37	2.33	2.66	2.69
PM10	HOV	NB	2	1562315624	2.37	2.33	2.66	2.69
PM10	HOV	NB	2	1562415627	10.68	10.51	11.97	12.10
PM10	HOV	NB	2	1562715628	11.87	11.67	13.31	13.45
PM10	HOV	NB	2	1562815629	7.91	7.77	8.87	8.97
PM10	HOV	NB	2	1562915630	3.96	3.88	4.44	4.48
PM10	HOV	NB	2	1563015631	7.91	7.76	8.87	8.97
PM10	HOV	NB	2	1563115632	3.96	3.88	4.44	4.48
PM10	HOV	NB	2	1563215633	3.96	3.88	4.44	4.48
PM10	HOV	NB	2	1563315634	7.91	7.76	8.87	8.97
PM10	HOV	NB	2	1563415635	11.87	11.64	13.31	13.45
PM10	HOV	NB	2	1563515726	7.91	7.77	8.87	8.97
PM10	HOV	NB	2	1572615727	7.91	7.76	8.87	8.97
PM10	HOV	NB	3	1349415732	1.44	4.60	1.44	8.13
PM10	HOV	NB	3	1349615746	1.69	5.41	1.69	9.57
PM10	HOV	NB	3	1572715728	1.69	5.41	1.69	9.57
PM10	HOV	NB	3	1572815729	0.42	1.35	0.42	2.39
PM10	HOV	NB	3	1572915730	1.35	4.32	1.35	7.66
PM10	HOV	NB	3	1573015731	7.11	22.70	7.11	40.19
PM10	HOV	NB	3	1573113494	11.43	36.49	11.43	64.59
PM10	HOV	NB	3	1573215733	3.13	10.00	3.13	17.70
PM10	HOV	NB	3	1573315734	1.02	3.24	1.02	5.74
PM10	HOV	NB	3	1573415735	1.27	4.06	1.27	7.18
PM10	HOV	NB	3	1573515736	0.59	1.89	0.59	3.35
PM10	HOV	NB	3	1573615737	6.60	21.08	6.60	37.32
PM10	HOV	NB	3	1573715738	2.03	6.49	2.03	11.48
PM10	HOV	NB	3	1573815739	1.52	4.87	1.52	8.61
PM10	HOV	NB	3	1573915740	7.62	24.32	7.62	43.06
PM10	HOV	NB	3	1574015741	5.84	18.66	5.84	33.01
PM10	HOV	NB	3	1574115742	16.50	52.73	16.50	93.30
PM10	HOV	NB	3	1574215743	2.03	6.49	2.03	11.48
PM10	HOV	NB	3	1574315744	10.58	33.80	10.58	59.81
PM10	HOV	NB	3	1574415745	2.37	7.57	2.37	13.40
PM10	HOV	NB	3	1574513496	6.26	20.01	6.26	35.41
PM10	HOV	NB	3	1574616411	1.61	5.14	1.61	9.09
PM10	HOV	NB	3	1641110669	0.59	1.89	0.59	3.35
PM10	HOV	NB	4	1066910670	1.92	8.51	1.92	11.07
PM10	HOV	NB	4	1067010671	1.83	8.14	1.83	10.59
PM10	HOV	NB	4	1067110672	7.67	34.03	7.67	44.28
PM10	HOV	NB	4	1067210673	2.42	10.72	2.42	13.96
PM10	HOV	NB	4	1067310674	15.08	66.99	15.08	87.11

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM10	HOV	NB	5	1067410675	2.81	10.62	2.81	13.47
PM10	HOV	NB	5	1067510676	17.91	67.75	17.91	85.90
PM10	HOV	NB	5	1067610677	1.74	6.60	1.74	8.36
PM10	HOV	NB	5	1067710678	0.58	2.20	0.58	2.79
PM10	HOV	NB	5	1067810679	3.10	11.71	3.10	14.86
PM10	HOV	NB	5	1067910680	7.36	27.81	7.36	35.29
PM10	HOV	NB	5	1068010681	0.39	1.46	0.39	1.86
PM10	HOV	NB	5	1068110682	3.10	11.71	3.10	14.86
PM10	HOV	NB	5	1068210683	14.13	53.41	14.13	67.79
PM10	HOV	NB	5	1068310684	4.65	17.58	4.65	22.29
PM10	HOV	NB	5	1068410685	3.00	11.35	3.00	14.39
PM10	HOV	NB	5	1068510686	15.30	57.80	15.30	73.36
PM10	HOV	SB	1	1554815549	2.52	6.30	2.52	10.91
PM10	HOV	SB	1	1554915550	0.88	2.19	0.88	3.80
PM10	HOV	SB	1	1555015551	1.20	3.01	1.20	5.22
PM10	HOV	SB	1	1555115552	1.09	2.74	1.09	4.74
PM10	HOV	SB	1	1555215553	2.19	5.49	2.19	9.49
PM10	HOV	SB	1	1555315554	1.09	2.74	1.09	4.74
PM10	HOV	SB	1	1555415555	1.42	3.56	1.42	6.17
PM10	HOV	SB	1	1555515556	1.42	3.56	1.42	6.17
PM10	HOV	SB	1	1555615557	0.55	1.37	0.55	2.37
PM10	HOV	SB	1	1555715558	7.33	18.34	7.33	31.79
PM10	HOV	SB	1	1555815559	2.95	7.39	2.95	12.81
PM10	HOV	SB	1	1555915560	0.55	1.37	0.55	2.37
PM10	HOV	SB	1	1556015561	15.32	38.35	15.32	66.43
PM10	HOV	SB	1	1556115562	1.09	2.74	1.09	4.74
PM10	HOV	SB	1	1556215563	6.57	16.42	6.57	28.47
PM10	HOV	SB	1	1556315564	1.97	4.93	1.97	8.54
PM10	HOV	SB	2	1551715518	7.28	8.14	9.65	8.94
PM10	HOV	SB	2	1551815519	10.91	12.23	14.47	13.40
PM10	HOV	SB	2	1551915520	7.28	8.15	9.65	8.94
PM10	HOV	SB	2	1552015521	3.64	4.08	4.82	4.47
PM10	HOV	SB	2	1552115522	3.64	4.08	4.82	4.47
PM10	HOV	SB	2	1552215523	7.28	8.15	9.65	8.94
PM10	HOV	SB	2	1552315524	3.64	4.07	4.82	4.47
PM10	HOV	SB	2	1552415525	7.28	8.14	9.65	8.94
PM10	HOV	SB	2	1552515526	10.91	12.22	14.47	13.40
PM10	HOV	SB	2	1552615529	9.82	11.02	13.02	12.06
PM10	HOV	SB	2	1552915530	2.55	2.86	3.38	3.13
PM10	HOV	SB	2	1553015531	2.55	2.86	3.38	3.13
PM10	HOV	SB	2	1553115532	9.82	11.00	13.02	12.06
PM10	HOV	SB	2	1553215533	5.46	6.11	7.23	6.70
PM10	HOV	SB	2	1553315534	3.64	4.07	4.82	4.47
PM10	HOV	SB	2	1553415535	3.64	4.07	4.82	4.47

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM10	HOV	SB	2	1553515536	3.64	4.07	4.82	4.47
PM10	HOV	SB	2	1553615537	7.28	8.14	9.65	8.94
PM10	HOV	SB	2	1553715538	3.64	4.08	4.82	4.47
PM10	HOV	SB	2	1553815539	1.82	2.04	2.41	2.23
PM10	HOV	SB	2	1553915540	2.91	3.26	3.86	3.57
PM10	HOV	SB	2	1554015541	3.64	4.07	4.82	4.47
PM10	HOV	SB	2	1554115542	1.82	2.04	2.41	2.23
PM10	HOV	SB	2	1554215543	4.00	4.48	5.30	4.91
PM10	HOV	SB	2	1554315544	7.28	8.14	9.65	8.94
PM10	HOV	SB	2	1554415545	7.28	8.14	9.65	8.94
PM10	HOV	SB	2	1554515546	3.64	4.07	4.82	4.47
PM10	HOV	SB	2	1554615547	10.91	12.21	14.47	13.40
PM10	HOV	SB	2	1554715548	3.64	4.08	4.82	4.47
PM10	HOV	SB	2	1565915517	5.09	5.70	6.75	6.25
PM10	HOV	SB	2	1572415659	4.37	4.89	5.79	5.36
PM10	HOV	SB	3	1070610707	2.09	0.83	3.59	0.83
PM10	HOV	SB	3	1070715701	5.66	2.25	9.73	2.25
PM10	HOV	SB	3	1349515702	22.36	8.90	38.43	8.90
PM10	HOV	SB	3	1570113495	5.96	2.37	10.25	2.37
PM10	HOV	SB	3	1570215703	8.05	3.20	13.83	3.20
PM10	HOV	SB	3	1570315704	37.26	14.83	64.04	14.83
PM10	HOV	SB	3	1570415705	7.15	2.85	12.30	2.85
PM10	HOV	SB	3	1570515706	58.43	23.25	100.42	23.25
PM10	HOV	SB	3	1570615707	20.87	8.31	35.86	8.31
PM10	HOV	SB	3	1570715709	20.87	8.31	35.86	8.31
PM10	HOV	SB	3	1570915710	6.26	2.49	10.76	2.49
PM10	HOV	SB	3	1571015711	12.22	4.86	21.01	4.86
PM10	HOV	SB	3	1571115713	22.95	9.14	39.45	9.14
PM10	HOV	SB	3	1571315714	2.38	0.95	4.10	0.95
PM10	HOV	SB	3	1571415715	4.47	1.78	7.69	1.78
PM10	HOV	SB	3	1571515716	3.58	1.42	6.15	1.42
PM10	HOV	SB	3	1571615717	8.65	3.44	14.86	3.44
PM10	HOV	SB	3	1571715718	2.68	1.07	4.61	1.07
PM10	HOV	SB	3	1571815719	5.07	2.02	8.71	2.02
PM10	HOV	SB	3	1571915720	40.25	16.02	69.17	16.02
PM10	HOV	SB	3	1572015721	25.34	10.08	43.55	10.08
PM10	HOV	SB	3	1572115722	4.17	1.66	7.17	1.66
PM10	HOV	SB	3	1572215723	1.49	0.59	2.56	0.59
PM10	HOV	SB	3	1572315724	5.96	2.37	10.25	2.37
PM10	HOV	SB	4	1070110702	65.27	17.45	87.42	17.45
PM10	HOV	SB	4	1070210703	10.76	2.88	14.41	2.88
PM10	HOV	SB	4	1070310704	32.64	8.73	43.71	8.73
PM10	HOV	SB	4	1070410705	8.25	2.21	11.05	2.21
PM10	HOV	SB	4	1070510706	8.25	2.21	11.05	2.21

Pollutant	Lane Type	Direction	Section	LinkID	Mass Emissions (grams/hour)			
					Base		Future	
					AM	PM	AM	PM
PM10	HOV	SB	5	1068910690	67.57	22.72	73.71	22.72
PM10	HOV	SB	5	1069010691	13.17	4.43	14.37	4.43
PM10	HOV	SB	5	1069110692	20.40	6.86	22.25	6.86
PM10	HOV	SB	5	1069210693	62.47	21.01	68.15	21.01
PM10	HOV	SB	5	1069310694	13.17	4.43	14.37	4.43
PM10	HOV	SB	5	1069410695	1.70	0.57	1.85	0.57
PM10	HOV	SB	5	1069510696	33.15	11.15	36.16	11.15
PM10	HOV	SB	5	1069610697	12.75	4.29	13.91	4.29
PM10	HOV	SB	5	1069710698	2.55	0.86	2.78	0.86
PM10	HOV	SB	5	1069810699	8.07	2.72	8.81	2.72
PM10	HOV	SB	5	1069910700	78.19	26.30	85.30	26.30
PM10	HOV	SB	5	1070010701	11.90	4.00	12.98	4.00

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